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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MARCH 29 1941

USE OF A GLYCERIN–SULPHONAMIDE PASTE ("EUGLAMIDE") IN TREATMENT OF BURNS

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Since the introduction of the tannic acid technique much progress has been made in the treatment of burns, though there have always been difficulties that have been only partially overcome. The limitations in our present knowledge have, however, been emphasized by the unusual conditions prevailing during the war. In civil life the lesions were mainly scalds and therefore of second degree, except in parts becoming septic, when lesions of the third degree developed.* In war the proportion of burns of the third degree is relatively high, and the problem of dealing with these lesions and their sequels has become much more important.

General Principles

The principles governing the treatment of burns are generally established. Thus it is recognized that the first aim is to save life, the second to avoid infection, and the third to prevent deformity. If life is endangered the consideration of paramount importance is the prevention of secondary shock. This is done by maintaining the body temperature and by the administration of a sedative and of intravenous plasma or serum; then, as soon as is practicable, the burnt area is cleansed and tanned.

In many cases already seen in the present war life has not been endangered, and yet the treatment has not been successful in preventing sepsis and deformity. These unfortunate results have been due essentially to the indiscriminate or faulty use of coagulating agents without consideration of the depth and site of the injury. In the case of third-degree burns there is total destruction of skin, and this lost skin has to be replaced by grafting, whatever the preliminary line of treatment adopted. The ideal mode of treatment is therefore one which as rapidly as possible will give a clean surface suitable for grafting. Up till now tanning has been the method of choice, but it has invariably resulted in infection. Under these conditions the tan separates slowly, leaving an unhealthy granulating surface. It is therefore obvious that this way of dealing with third-degree burns is unsatisfactory, and that there is an urgent need for a more efficient procedure.

The treatment of burns of the face and hands has presented special difficulties. In so far as the face is concerned the problem is mainly that of the third-degree burn, which, even when small, is apt to produce disfigurement on healing. The treatment of second-degree burns of the face should present no special difficulties: there is no complete destruction of the skin, and therefore the use of coagulating agents should give satisfactory results. Nevertheless a number of workers who have used tanning agents have experienced difficulties in such cases.

The greatest problem, however, and one of urgent interest, is the treatment of burns of the hands. The present method of treatment in such cases is by no means satisfactory, and this applies not only to third-degree burns but even to lesions of the second degree. Those who have seen the unfortunate results of the indiscriminate application of tannic acid to burns of the hands will be convinced that the general use of coagulating agents should not be advocated; oedema and sepsis under a rigid tan, together with prolonged immobilization, have played their part in producing limitation of movement, contracture, and, in extreme cases, ischaemic necrosis.

The New Method

The method of treatment described below was evolved for the purpose of meeting these very obvious difficulties. In principle it consists in the application to the burnt area of a water-soluble sulphonamide in solution in glycerin. The sulphonamide compound albucid soluble was chosen because it was freely soluble in water, formed a neutral solution, and was known to be innocuous to tissues. It appears probable that other sulphonamide compounds which possess the qualities mentioned above would be equally effective, but limitations of time and clinical material have so far prevented the carrying out of comparative tests of different compounds.

Glycerin by itself is unsuitable for local application to the surface of the body. The albucid solution was therefore converted into a paste by the addition of a suitable quantity of kaolin. Since the paste contains a glycerin–kaolin mixture it produces the effects usually associated with cataplasma kaolin. Thus there is an increase in the flow of lymph containing antibodies and white blood corpuscles; this will tend to increase the local defence mechanism. The flow of tissue fluids together with the absorption of water by the glycerin helps to reduce the oedema, which is an undesirable feature of burns in certain localities. Preliminary observations showed that the paste tended to dry in the centre of the area of application, consequently a small quantity of cod-liver oil was incorporated. Incidentally, it is possible that this may have additional advantages—e.g., a beneficial effect on tissue repair and a local soothing action.

* In a first-degree burn there is erythema of the affected part; in a second-degree burn partial destruction of skin with or without vesication; and in a third-degree burn total destruction of skin.

Such a paste can be of value only if it does not cause any irritation. It has been found in practice that, though there may be slight pain when it is first applied to the injured area, this very rapidly passes off and does not recur. On the contrary, our experience suggests that in some cases the paste possesses an appreciable soothing effect.

The treatment of burns with this paste allows of early movement. This is of considerable importance, since the immobilization of the affected parts associated with the use of coagulating agents is an important factor in preventing the subsequent restoration to normal functional activity.

Method of Preparing the Paste.—5 grammes of soluble albucid powder is mixed with 100 c.cm. of glycerin; the mixture is then heated cautiously until the solid is completely dissolved. This usually takes about thirty minutes, the mixture being stirred from time to time. The heating is then discontinued; while the mixture is still warm 10 c.cm. of cod-liver oil is added, being thoroughly stirred in. This solution is mixed into a quantity of fine kaolin (about 80 grammes) sufficient to yield a smooth paste of the consistence of thick cream. The mixing is done in a mortar, and, later, on a white slab with a spatula, in order to produce a smooth permanent paste.

Clinical Results.—The paste has been used with success in burns of the hand (second and third degrees), the face and scalp (second and third degrees), the buttock (second and third degrees), the penis and scrotum (second degree); in septic burns, following twenty-four hours of wet dressings; and in burns of the second degree not extensive in area.

The value of the paste in certain conditions—e.g., bedsores, carbuncles—is also being investigated, and it is hoped to report on the results at some future date.

Technique of Application

An anaesthetic may be required for cleansing, but this is not essential, except in most children, in whom fear and apprehension are prominent. Before intervention, cultures are made from the surface of the burn and from blister fluid, and these are repeated every second or third day. In second-degree lesions the affected part is cleansed with gauze wrung out of isotonic saline at body temperature. Blisters and loose epidermis are snipped and removed. In third-degree burns the surface is gently washed with warm physiological saline and all foreign material removed.

In applying the paste a thick spread is made on sterile white lint, gauze, or linen; for burns of the face a mask is cut out. Further dressing is applied if necessary, and the whole is covered with wool and bandaged. In burns affecting the face and in the region of flexures the paste and dressings are reapplied daily, but in other parts they may be kept on for three days before being changed. Where infection is present it is essential, in order to maintain a high local concentration of the sulphonamide, that daily reapplications of the paste be made, no matter the site. At each change of dressing the affected part is wiped clean with wool pledgets soaked in normal saline or cod-liver oil.

Most of the burns treated have been of the second degree, and have occurred in children. In this series neither the interval between the occurrence of the injury and admission to hospital nor the nature of the first-aid treatment appeared to influence the ultimate result. Undoubtedly some regions responded in a very promising manner to the application of the paste—e.g., the hands, the face, the abdomen, the buttocks, the feet, and the penis and scrotum; other areas—e.g., the axilla and shoulder region—showed less response but nevertheless did well. In several patients anaesthesia was not required for preliminary cleansing. Pain was experienced on application of the paste in only a few instances, and irritation was absent. As a rule an early healing surface was obtained, as can be judged from the period during which the patient remained in hospital (see accompanying table).

The rate of healing with the paste (termed "euglamide") compared favourably with that obtained with tannic acid in the two cases in which both methods were used (Nos. 8 and 15). In each of these cases the burn on one hand was treated with silver nitrate while paste was applied to the burn on the other; the hands treated with paste healed and showed normal function before the coagulum on the other hands had begun to separate. In Case 4 (treated originally with charcoal-silver nitrate jelly) the healing properties of the paste when applied to a septic granulating surface compared very favourably with those of acriflavine under the same conditions. Initial sepsis appears to be an indication for the application of euglamide. In such patients the routine adopted up to the present is as follows: hot boric fomentations are applied every four hours for one to two days; a thick spread of the paste is then put on once daily in order to maintain a high local concentration of albucid.

Very satisfactory results were obtained in facial burns. The method of treatment in such cases has, moreover, the additional advantage that it allows the patients a certain amount of freedom, which cannot be permitted if tannic acid has been used.

So far we have had the opportunity of employing the paste in only a few burns which involved the whole depth of the skin, but the results have been promising, as is illustrated by the following case:

Case 7 had a third-degree burn of the dorsum of the hand, which was treated with euglamide from the first. The natural coagulum separated on the fifteenth day and left a granulating area of healthy appearance; at this stage a culture gave a sparse growth of *Staph. aureus*. There was complete absence of oedema and of neighbouring inflammatory reaction, while movements of the tendons were free from the first. Pain was notably absent.

Our experience with another patient suggests that the paste may prove to be very valuable in the treatment of burns of the penis and scrotum:

On admission this patient (Case 19) showed very marked local oedema. The insertion of an indwelling catheter was contemplated, but since urine had been voided just before admission the procedure was delayed. The paste was applied, and the following morning the oedema, though still pronounced, was definitely less, and catheterization proved unnecessary. A steady improvement followed.

The paste has proved of value in burns which had become septic after the use of a coagulating agent; in these cases euglamide was applied to the unhealthy granulating surface remaining after removal of the coagulum, and rapid healing was promoted (Cases 16 and 17).

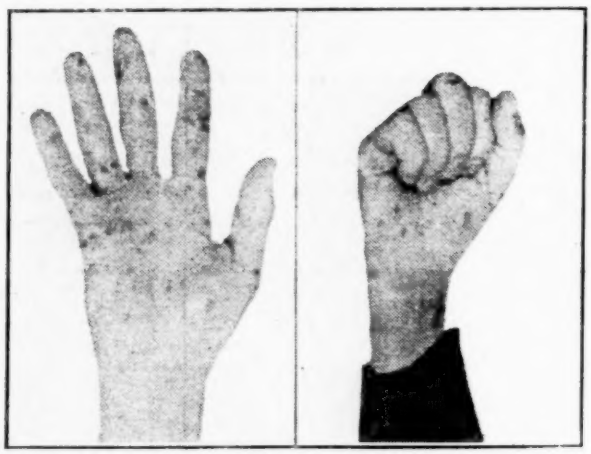
The history of Case 20 is interesting (see Figs. 1–4). This patient had second-degree burns of the right hand affecting the thenar eminence, a small area of the palm, and the second and third finger clefts from the web to the level of the distal interphalangeal joint. Tannafax jelly had been applied immediately by the medical attendant; six hours later this was removed at the casualty hospital and four-hourly saline compresses were ordered. When first seen by us one week later the condition was unsatisfactory: the patient complained of local pain, severe enough to keep him awake at night; the raised epithelium had been only partly removed from the burn and there was a considerable amount of dead skin left; the areas exposed were raw, tender, and inflamed; the blister on the palm was still intact; and movement of the fingers at the metacarpo-phalangeal joints was limited to 30 degrees of

Table showing Results in a Series of Burns Treated with Euglamide

Case No.	Age (Years)	First-aid Treatment	Time elapsed till Admission	Nature of Lesion	Depth and Extent	Anaesthetic	Treatment	Days in Hospital	Remarks
1	1+	Boric ointment	30 hrs.	Scald	2nd and slight 3rd degree, left iliac fossa	Gas-and-oxygen	Cleansed; paste applied; reapplication every 3rd day	12	Application painless; non-irritant; early healing surface obtained
2	6+	Soapy water and olive oil	1 hr.	,,	2nd degree, upper arm, forearm, and hand	,,	Cleansed; paste applied to upper arm and reapplied every 3rd day; other areas tanned	6 (tran. to isolation hospital)	Remarks on Case 1 apply equally well
3	2+	Vaseline and starch	24 hrs.	Burn	Small 2nd and 3rd degree, buttock	None	Cleansed; fomentations applied for 24 hrs., then paste daily	6	An instance of rapid healing
4	1+	Olive oil and flour	1½ hrs.	Scald	2nd degree, chest, shoulders, and neck	Gas-and-oxygen	Charcoal-silver nitrate jelly applied; removed on 10th day, since tan was moist and septic; acriflavine applied to one half of infected area, paste to the other. After 6 days the part with paste was healed, the part with acriflavine healthy but raw	22	Healing and antiseptic properties of the paste demonstrated
5	3+	Carron oil	1 hr.	,,	2nd degree, neck, chest, and shoulders	None	Cleansed; paste applied; reapplied every 3rd day	12	Satisfactory healing
6	1+	Tannic acid jelly	1 hr.	,,	2nd degree, pubis, vulva, thighs, left leg, and foot	Gas-and-oxygen	Cleansed; paste applied to foot; reapplied every 3rd day; other parts tanned	30	Foot healed by 16th day. Coagulum began to separate on 22nd day
7	5+	None	2 hrs.	Burn	3rd degree, dorsum, left hand	,,	Cleansed; paste applied; reapplied every 3rd day	Under treatment	Kept perfectly dry without any sign of local inflammation; on 13th day slight moisture apparent at edges; on 15th day the natural coagulum separated, leaving healthy granulating surface
8	4+	Tannic acid jelly	2 hrs.	,,	Extensive 1st, 2nd, and 3rd degree, involving ear, cheek, chin, neck, right forearm, left forearm, hands, and legs	,,	Intravenous plasma; cleansed; paste applied to face and left hand; other affected parts, including right hand, tanned	Under treatment	Left hand healed perfectly by 8th day; movements full; tan on right hand still adherent, with no sign of separation
9	34	None	4 hrs.	Scald	2nd degree, dorsum right foot	None	Cleansed; paste applied; reapplied every 3rd day	9	Almost healed by 6th day
10	11	Tannic acid jelly	28 hrs.	,,	2nd degree, right buttock	,,	Cleansed; paste applied; reapplied every 3rd day	8	Healed by 6th day
11	—1	,,	4 hrs.	Burn	2nd and 3rd degree, buttocks	Gas-and-oxygen	Cleansed; paste applied; reapplied every 3rd day	14	Very small area on right buttock still to heal on discharge; satisfactory healing considering age and site
12	1+	Olive oil	1+ hr.	Scald	2nd degree, left shoulder, arm, and chest	None	Cleansed; paste applied; reapplied daily	18	Some pain on application; a rather complicated case; scarlatiniform rash, etc.; 2 small areas still to heal on discharge
13	2+	,,	2+ hrs.	,,	2nd degree, left side of face, scalp, and small area of chest	Gas-and-oxygen	Cleansed; paste applied; reapplied every 3rd day	12	Face healed by 5th day; very small area on chest still to heal on discharge
14	1+	?	17 hrs.	Burn	2nd degree, involving an area 4 in. in diameter over vertex of head and left auricle; 3rd degree of scalp just posterior to auricle penetrating to bone	,,	Cleansed; paste applied; reapplied daily	Under treatment	On 8th day all parts healed except area behind the ear
15	4+	Olive oil	1 hr.	Scald	Extensive 2nd degree, involving chest, abdomen, groins, thighs, left axilla, face, palm of left hand	,,	Intravenous plasma; cleansed; paste applied to left hand; other parts tanned	,,	Left hand healed by 9th day with full movement; no sign of separation of tan
16	7	None	1–2 hr.	,,	2nd degree, right forearm and both lower limbs	,,	Cleansed; tanned; coagulum removed on 10th day because of sepsis; paste then applied; reapplied every 2nd day	,,	Practically healed after 3 applications of paste
17	4	,,	1–2 hr.	,,	2nd degree, scalp and right shoulder	,,	Cleansed; tanned; coagulum over shoulder removed on 14th day because of sepsis; paste then applied; reapplied every 2nd day	,,	Practically healed after 3 applications of paste
18	3+	Tannic acid jelly	2½ hrs.	Burn	2nd degree, lower lip and under surface of lower jaw	None	Intravenous plasma; cleansed; paste applied; dressed every 2nd day	,,	Almost healed by 4th dressing
19	2+	Olive Oil	3½ hrs.	Scald	2nd degree, suprapubic area, penis, and scrotum. Very marked oedema	Gas-and-oxygen	Cleansed; paste applied as spread every 4 hours for 24 hours, then 3 times a day	,,	On day following admission oedema was distinctly less; by 6th day progress was rapid
20	19	Tannic acid jelly for 6 hrs., then saline compresses	1 wk.	Burn	2nd degree, right hand thenar eminence, palm, second and third finger clefts	None	Cleansed; blisters snipped and considerable dead skin removed; paste applied; reapplied every 2nd day	Out-patient	Healed within 7 days; movements free and full

flexion. All dead epidermis and inspissated discharge were now removed, the parts cleansed with normal saline, the paste applied, and the hand placed in the position of maximum function. After two applications pain was absent, movement of the fingers was free, and the raw areas had almost healed. Apart from illustrating the value of euglamide, the history of this patient demonstrates that saline treatment, like tanning, may lead to unsatisfactory results and thus to condemnation of the method.

FIGS. 1 and 2.—Photographs of hand (Case 20) seven days after being burnt. Treatment had been tannic jelly for six hours, then saline baths and compresses. Fig. 1, with extension of fingers; Fig. 2, attempted full flexion of fingers.



FIGS. 3 and 4.—Photographs of same hand after seven days' treatment with euglamide. Fig. 3, with fingers in extension; Fig. 4, with fingers in full flexion.

Discussion

It must be emphasized that this study is merely in its preliminary stages, as only a limited number of cases have been treated. Nevertheless the results obtained so far have been promising, and suggest that further work is desirable. The method was evolved in an attempt to solve the difficulties experienced in the treatment of burns of the hands and face and of those of third degree: most of the burns treated have been of the second degree, the type usually encountered in civil life. We have not had an opportunity of treating the many burns of the third degree met with in Service casualties. There is no suggestion that in extensive burns euglamide should be used as an alternative to tannic acid; it is well recognized that in such cases the application of a coagulating agent is essential to combat secondary shock. There are certain types of burns, however, in which euglamide treatment offers (so far as we can judge from our present experience) definite advantages as compared with other methods. This applies more especially to those lesions in the treatment of which the coagulating method has been adversely criticized; thus it is well known that all third-degree burns become infected, while second-degree burns in certain localities—e.g., hands and face—may show undesirable after-effects when treated with tannic acid. For these reasons the saline-bath method has recently been revived, but it would appear to have certain drawbacks. It involves considerable nursing attention and the employment of elaborate facilities; this in itself would make it very difficult to deal with more than a limited number of cases at any particular time. Moreover, the method does not control sepsis, though this could be done by the addition of albucid soluble to the irrigating fluid. In this connexion it is of interest to note that Carrel and his co-workers showed that the rate of healing of wounds is appreciably increased by the addition of certain antiseptics to the irrigating fluid (Carrel and Dehelly, 1918).

The euglamide method does not appear to possess the disadvantages associated with the tannic acid and saline techniques of treatment. It has proved effective in dealing with burns of the face and hands, allowing of rapid and uneventful recovery. Indeed, in two cases in which an accurate comparison with tannic acid was possible the rate of recovery with euglamide was very gratifying. This may have been due to the fact that, with euglamide, movement of the fingers was possible from the first and oedema was rapidly controlled.

In third-degree burns the results obtained in Case 7 would suggest that the paste allows of an early separation of slough, control of sepsis, and the development of a healthy granulating surface for early skin-grafting.

Routine bacteriological examinations have been and are being made in all cases with a view to determining the possible effect of the paste on different types of infecting organisms. With the limited series of cases so far studied a discussion of the results would be premature. At the same time it is of interest to note that investigations performed by Dr. de Waal in the department of bacteriology of the University of Edinburgh have shown by means of *in vitro* experiments that albucid soluble exerts a bactericidal and bacteriostatic action against *Str. pyogenes* and also some bacteriostatic action against *B. coli*. (We are very grateful to Dr. de Waal for allowing us to quote these as yet unpublished results.)

It is possible that soluble sulphonamides other than albucid might be more suitable for the treatment of certain types of infected burns, and in our further work we hope to study the possible value of euglamide pastes containing these.

Summary

Euglamide paste has proved very useful in the treatment of burns in certain areas—e.g., hands, face, scalp, feet, abdomen, buttocks, scrotum, and penis.

In small second-degree burns the paste caused slight pain on application in a few cases; later on it is soothing, non-irritant, and healing. Preliminary cleansing can often be carried out without anaesthesia. The paste is simple to apply, and the patient has more freedom of movement than when a coagulating agent is used.

Infected burns have also responded in a very satisfactory manner to treatment with the paste.

In one purely third-degree burn treated with euglamide a clean surface suitable for grafting was rapidly obtained.

Only a limited number of cases have so far been investigated; but in our opinion the results have been promising enough to justify further work.

We should like to express our gratitude to Profs. A. J. Clark and J. R. Learmonth for their constant interest and advice in this work.

We are greatly indebted to Mr. Edwards, of Schering Ltd., for the supply of the albucid soluble used in this work.

REFERENCE

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DIGESTIVE DISORDERS IN THE FORCES

BY

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The types of cases seen in the wards and out-patient departments of military hospitals present general variations similar to those found in civil hospitals. Thus rheumatic and respiratory disorders have the usual seasonal fluctuations. On the other hand, conditions such as effort syndrome and general psychological disorders tend to increase temporarily with the periodic intake of recruits. But in our experience in a home hospital during the present war the only cases showing steady addition in numbers comparable to the increasing size of the Army have been those with digestive disorders, and in consequence we have been struck by their significance in the Forces. Our cases have been drawn from all branches—Navy, Army, Air Force, and Women's Auxiliary Services. However, Army patients have constituted an overwhelming majority. It was noted, over a period of fourteen months in a military hospital in a north-western area, that of 790 medical in-patients 246 (31.1%) were admitted on account of gastro-intestinal complaints; while in a north-eastern hospital it was found that of 980 medical admissions 353 (36%) were gastro-intestinal cases; but it must be borne in mind that these hospitals are used largely for the investigation of such cases, which are especially sent for this purpose, and consequently the percentage of gastro-intestinal conditions admitted is not a measure of their incidence in all hospitals. Nevertheless, gastric disorders are an important problem in the Services.

Methods of Investigation and Treatment

In a large north-western military hospital our procedure in assessing cases of gastro-intestinal disorder is to obtain an accurate case history, make a detailed clinical examination, and then undertake certain lines of special investigation. In what we may term the "gastric" group, which includes cases of gastritis in addition to those of peptic ulcer, tests for occult blood in the stool are performed after seventy-two to ninety-six hours on a haemoglobin and chlorophyll-free diet. This is followed in many instances by a fractional test meal. Finally an *x*-ray examination by barium meal is carried out in all save a very few cases concerning which positive findings are readily obtainable from recent investigation in civil life. Where the gall-bladder or large bowel appears to be implicated cholecystography or examination by barium enema is carried out.

With the gastric group the dietetic treatment as outlined by Hurst (1931) is employed with excellent results. By this method the modern dietetic principles in treating peptic ulcer are followed—that is, physical rest is combined with a well-balanced diet of an adequate caloric value and vitamin content.

Table I shows the proportions of major types of digestive disorder admitted to this military hospital, and their age incidence. At once it is seen that cases of peptic ulcer form the chief problem among the dyspepsias, accounting for actually 64.23% of such patients. No attempt has been made to study the incidence of dyspepsia in the various branches of the Forces or to examine sex incidence, since this would be of no value with the figures at our disposal. It was found that there were four main groups of digestive disorder: duodenal ulcer (54.88%), gastric ulcer (9.35%), gastritis (24.39%), and miscellaneous dyspepsias (11.38%). In this last group psychological disorders appeared to play a relatively unimportant part, and we were struck by the rarity of malingering. In our series there were no fatalities.

TABLE I.—*Age Incidence in Major Dyspepsias*

	Under 20	20–29	30–39	40–49	50+	Total Cases
Duodenal ulcer ..	3	52	49	27	4	135
Gastric ulcer, including one stomal ulcer	—	5	10	7	1	23
Gastritis	1	22	19	13	5	60

By the addition of 28 cases of miscellaneous dyspepsias a total is reached of 246 consecutive admissions on account of digestive disorders. There were 790 medical admissions in all during the fourteen-months period under review.

Duodenal Ulcer

Duodenal ulcer formed 85.5% of the cases of peptic ulcer—14 were in officers, the remainder in other ranks. There were no female cases. Perforation had occurred in civil life in 4 instances and in a fifth shortly after embodiment. In 8 patients gastro-enterostomy had been performed, and in 18 appendicectomy. There was a history of either haematemesis or melaena, or both, in 5 patients previously and in a similar number after entering the Forces. The average duration of symptoms was seven years, and only 5 patients (3.7% of the total cases of duodenal ulcer) stated that indigestion occurred first after embodiment. The stool was found to be positive for occult blood in 80% of cases. Fractional test meals were carried out in many instances (Table II). The results are in keeping with those usually found—namely, the majority of such cases show a well-marked hyperchlorhydria.

TABLE II.—*Test-meal Findings*

	Achlorhydria	Hypochlorhydria	Normal	Hyperchlorhydria	Total Cases
Duodenal ulcer ..	—	2	20	26	48
Gastric ulcer ..	1	3	3	1	8
Gastritis	11	15	17	12	55
Miscellaneous ..	1	4	6	1	12

A barium-meal examination was carried out and an ulcer niche or distortion of the duodenum was noted in all but one case, in which, although the *x*-ray findings were negative, an acute ulcer was diagnosed. (In this man an active ulcer had been noted at a previous examination in 1937; the stool was strongly positive for occult blood, and in addition a marked hyperchlorhydria was present.) Our well-marked positive findings can be explained on the fact noted above—that the average duration of symptoms in our series was seven years. Moreover, in over 96% of the cases exacerbation of a chronic ulcer was dealt with. Recrudescence of symptoms occurred rapidly after enlistment—in 70% within two months and in the remainder within eight months.

Gastric Ulcer

The cases of gastric ulcer numbered 23—14.6% of the peptic ulcer total. Fifteen had lesser-curvature ulcers, the remainder were prepyloric. There were 2 officers but no female cases. Two perforations occurred in this

group—1 before the war and 1 after. There was a history of haematemesis in 3 patients before enlistment, with recurrence in one instance two months after embodiment. In one man included in this group gastro-enterostomy had been performed on account of duodenal ulceration with subsequent development of a stomal ulcer. Appendicectomy had been previously undertaken in 2 patients.

With the exception of 4 patients (17.4%) there was a history of digestive trouble in civil life, the average duration of symptoms being five and a half years. The situation of the ulcer did not affect this last point. The stool was found to be positive for occult blood in 66% of the cases. The results obtained from fractional test meals, while too few to draw any general conclusion, show a rather lower acidity than in the duodenal group. This is explained by the greater irritation of the gastric ulcer, resulting in concomitant gastritis and consequent over-production of mucus (Hurst, 1935). A barium meal showed an ulcer niche in all but two instances. This examination was carried out within ten to fourteen days of admission to hospital, since it was of the highest importance to obtain radiological evidence of the presence of ulcer for purposes of the consequent medical boards. As has been noted by several observers (Hurst and Stewart, 1929; Hurst and Ryle, 1937), the ulcer niche in the gastric mucosa may with adequate treatment cease to be seen after three to four weeks. As with the cases of duodenal ulcer, relapse after embodiment occurred within periods varying from a few days to two months in the bulk of cases, but a few of these patients had remained well for periods up to seven months after enlistment.

Disposal of Cases of Peptic Ulcer

Where investigation had revealed the definite presence of peptic ulceration every patient was brought before a medical board. Apart from officers all these patients were found to be unfit for any form of military service with the exception of one man suffering from gastric ulcer who was passed as fit for home service only. Commissioned ranks, for reasons to be stated later, were dealt with differently. Of 14 officers with duodenal ulcers 5 were passed as fit for home service only, the others being returned to civil life. One of the 2 officers with gastric ulceration was graded as fit for home service only; the other was passed fit for general service.

In the last case there were symptoms of indigestion for some four months with loss of weight. This patient was admitted to another hospital, where laparotomy was performed. A mass noted as "either malignant or inflammatory" was observed in the posterior pyloric region, extending into the duodenum. Gastro-enterostomy was performed and the abdomen closed. He came under our care about four months afterwards, in excellent health, gaining in weight and symptomless. The stool was negative for occult blood. A fractional test meal gave normal findings, and on two occasions the barium-meal examination showed a normally filled stomach and a functioning stoma. The Kahn test was negative.

Gastritis

Sixty patients—almost 25% of the cases of dyspepsia and therefore an important moiety—were diagnosed as suffering from gastritis. Many of them gave a history of pain and vomiting after food that was so typical of peptic ulcer that the results of barium meals and fractional gastric analyses formed essential parts of the diagnostic criteria. We have adhered to the views of Hurst (1935) in assessing these cases, and the test-meal findings in Table II show that great variations in acidity occur in such conditions. Abundant mucus was present, especially in the fasting juice. The great majority (79%) suffered from exacerbation of a chronic gastritis, there being a history of indigestion of several years' duration (average seven years). The remainder gave no history of gastric trouble in civil life and were examples of acute gastritis due to alteration in diet following embodiment. There were four cases in commissioned ranks; the others occurred among N.C.O.s and men, with the addition of one in a member of the A.T.S.—our only female case. Thirty-one complained of symptoms arising rapidly after embodiment, and the remainder were able to carry on for periods up to one year. A weak positive result for faecal occult blood was obtained in 25% of all cases of gastritis.

Disposal of Patients with Gastritis

All save two patients in this series did well and were returned to their units, in some instances via a convalescent home. It was explained to these men that they did not suffer from any serious digestive ailment, such as an ulcer, and they were instructed to avoid particularly "heavy" constituents in their Army diet. In one instance a man aged 49 was returned to civil life owing to absence of improvement (he had achlorhydria); a second was dealt with similarly on account of a concomitant hand injury which interfered with his duties and superadded a psychological element.

Miscellaneous Group

A miscellaneous assortment of gastro-intestinal troubles accounted for the remaining cases of dyspepsia and comprised only 11.38% (28 cases). They were made up as follows: abdominal adhesions, 6 cases; catarrhal jaundice, 5; chronic cholecystitis, 2; cirrhosis of liver, 1; duodenal diverticulum, 1; gastric carcinoma, 1; gastro-enteritis, 5; mucous colitis–spastic colon group, 6; and one example of gastro-intestinal supersensitiveness. In this series 4 cases were in females. Seven of these patients were returned to civil life, while 2 were found fit for home service only. The large proportion of these cases "boarded" out of the Army is not of real significance owing to the small total number involved.

The patient showing gastro-intestinal supersensitiveness is of interest. A gunner aged 44 was admitted with a history of haematemesis. He stated that he had seldom suffered from gastric symptoms in civil life, but since embodiment had been frequently seized with severe abdominal pain accompanied by vomiting. He blamed the midday meal. On admission, although the stool contained occult blood, he stated that he felt perfectly well and wished to return to his unit. A fractional test meal gave normal findings and a barium-meal examination did not reveal evidence of either gastric or duodenal ulcer. The stool was tested after another seven days and was negative. At this point he was placed on Hurst's diet for peptic ulcer, Stage 2, and on irregular occasions complained of severe epigastric pain and vomited after meals. It was suspected that in this instance we were dealing with an example of supersensitiveness to a particular food, and the offending article—carrot—was detected and eliminated from his meals, with rapid and complete cure. He then stated that he had always avoided this vegetable at home because he did not like it.

Summary of a Review of Digestive Disorders Seen in a North-Eastern Military Hospital

During the period April to October, 1940, it was found that of 980 medical cases in a north-eastern hospital 353 (36%) were admitted for radiological investigation on account of digestive complaints. In just over half the *x*-ray findings were negative. The majority of patients in this radiologically negative group suffered from gastritis, but 22% showed an anxiety neurosis of some form or another. Where there were positive *x*-ray findings duodenal ulcers were found to be nine times as common as gastric. Of the cases proved to

have ulcer 21 gave a history of operation for perforation; 23 had undergone gastro-enterostomy, and 21 gave a history of haematemesis (i.e., 15.8% of cases of proved ulcer). Of the 353 cases under review 56 had previously undergone appendicectomy. Of the cases examined by barium meals 54% were found unfit for further military service by medical boards. The mortality in the whole series was *nil*. Accordingly these results are in substantial agreement with those in the north-western hospital.

Discussion

The miscellaneous group of gastro-intestinal troubles, which make up only 11.38% of our series, consisting of hepatic and colonic disturbances, tumours, etc., have already been described. Nothing more need be written about them as the purpose of this paper is to draw attention to the problem presented by dyspepsia due to ulceration or gastritis.

There seems little doubt that digestive disturbances, particularly those due to peptic ulcer, have increased enormously during the past twenty years. This has been noted with concern in other countries, notably in the United States (Hinton, 1933; Wolfert, 1937; Rivers and Ferreira, 1938). The magnitude and importance of the increasing incidence of peptic ulcer have been brought sharply to the notice of the medical profession during the present war, and that condition has been shown to be the major cause of sickness among our Forces. Willcox (1940) found that in a British convoy from France which contained 174 medical sick 23.5% suffered from the dyspepsias. This group after investigation revealed the unexpected incidence of approximately 66% of peptic ulcer. Again, Morris (1940) noted that of 500 officers and men suffering from dyspepsia and examined radiologically in a military hospital 45% suffered from either duodenal or gastric ulcer, or both. Recently Payne and Newman (1940) carried out an important investigation into the subject of dyspepsia in the Army and found that, out of 287 cases, peptic ulcer was proved in 226 (78.7%), and to this they added a further 21 cases (7.3%) with probable ulcer. No significant difference was found on separating these cases into groups from the United Kingdom and France.

In our own series of 246 cases with gastro-intestinal complaints peptic ulcer was present in 64.23%, while cases of duodenal ulcer made up 85.5% of the latter. This significant fact was also noted by the authors quoted above. These patients, whether they suffered from duodenal or gastric ulcer, almost without exception were in the habit of carrying out a dietetic regime in civil life which approximated to the post-ulcer regime used at the present day, and with success so long as they adhered to it. This is a striking tribute to the efficacy of the medical treatment of peptic ulcer, since we find large numbers of patients pursuing their vocation efficiently and with little interruption. In this connexion it was pointed out by Colonel H. Letheby Tidy in his Harveian Oration (1936) that gastric ulcer is a more serious condition than duodenal ulcer, but he concluded that the outlook as regards complete cure was unfavourable in both.

The majority of those whose breakdown did not occur until some months after embodiment belonged to older age groups or found it possible to obtain suitable food. Such patients often stated that they purchased meals at the local canteen, especially the midday meal, trying to avoid stews, which they dreaded. Moreover, they were able to treat themselves with alkaline powders, usually of some much-advertised brand. Similarly, since a suitable diet was a less serious problem, commissioned ranks were sometimes able to carry on for periods up to a year before exacerbation of symptoms occurred. Officers could often carry on in comfort in France until active hostilities precluded suitable diet. In this connexion the severe physical strain and irregular meals before evacuation undoubtedly had an adverse effect. This was also noted in patients after the Norwegian campaign.

A feature in our cases is the general absence of severe complications. Thus in the duodenal ulcer group (135 patients) we find only one case of perforation, and only 5 cases (3.7%) of haematemesis occurring while serving with the Forces. During the period under review our surgical colleague Lieut.-Colonel E. G. Gerstenberg admitted 2 cases of perforation; in both a chronic ulcer of the anterior duodenal wall was found. In our gastric ulcer group there was but one instance of perforation after embodiment and one of haematemesis. On the other hand, Hurst and Ryle (1937) have stated that some 30% of ulcer patients in private practice show bleeding at one time or another. Graham, Alexander, and Kerr (1939) found over a ten-year period that approximately 57% of the cases of peptic ulcer in a civil hospital were admitted on account of active bleeding. Such marked discrepancy is probably accounted for by two factors: first, men with ulcer which is showing evidence of activity are unlikely to be passed as fit by the civil recruiting boards; and, secondly, sufferers go sick and receive treatment earlier in the Army than in civil life. The high proportion of ulcer cases with occult blood present in the stool suggests that, but for the discovery of this, gross bleeding might have become an important problem.

We were unable to obtain any convincing evidence of serious avitaminosis, nor was dental sepsis a more prominent feature in such cases than in other medical admissions.

In civil life many of these patients led a regular existence suited to their trouble. They seldom admitted that heavy smoking or alcohol played any part in their breakdown; indeed, we were struck by the number who stated that they were teetotal and never smoked more than ten cigarettes daily. Embodiment brought these men new problems—worry and the adjustment and strain of taking up a fresh mode of life and leaving their family or business. Altered conditions of living, lack of sleep, unsuitable billets, all affect such subjects adversely. Lastly, the Army diet is not suitable for persons who show the ulcer diathesis. The official decision to discharge men with active ulcers or with a history of long-standing severe gastric illness is of proved wisdom under the conditions of modern warfare.

Patients suffering from exacerbation of chronic gastritis, although they ascribed some improvement in their condition in civil life to the avoidance of fried food, stews, and pastries, did not as a class receive the same amount of benefit from a dietetic regime and were more introspective. As was found in the cases of peptic ulcer, and for similar reasons, the group who broke down several months after embodiment consisted mainly of the older men. It has been noted already that only 2 of the 60 patients in our series required to be discharged from the Service.

All cases of acute gastritis without previous history made a rapid recovery and the men returned to their units well. The cases of this type actually admitted to hospital are of course few, since the regimental medical officer is able in the vast majority of instances to deal with them himself. Thus it is seen, almost without exception, that men with gastritis, both chronic and recent, when given a fresh start and some general dietetic principles to go on, can safely be allowed to remain in the Army without alteration in category.

The high incidence of digestive disorders, particularly of duodenal ulcers, seen in the past two decades has been

thrown into sharp relief by the mobilization of our manpower for war. It would occasion little surprise if the quickening tempo of modern life were found to have a direct bearing on the problem presented by the increasing occurrence of the dyspepsias. No entirely convincing clue to this enigma has yet been offered, but it will be interesting to learn whether or not life in our Forces is adding significantly to the already high frequency of such disorders. Final judgment on this point must, of course, await the conclusion of the present conflict. We are in entire agreement with the leading article in the *British Medical Journal* of December 14, 1940, which stated that "the Army still marches on its stomach even though it travels in mechanized vehicles," and the dyspeptic passenger must be carefully scrutinized before taking part in the journey.

Summary and Conclusions

In Army medicine digestive disorders are presenting a large and increasing problem. Of 790 medical in-patients 246 (31.1%) were admitted to a military hospital on account of gastro-intestinal complaints.

The methods of investigation and treatment of dyspeptic patients in a large military hospital are outlined.

Of 246 cases of digestive disorder 135 (54.88%) were found to have duodenal ulcers, 23 (9.35%) had gastric ulcers, 60 (24.39%) gastritis, and 28 (11.30%) miscellaneous dyspepsias. Details are given of the clinical findings in these groups and of the ultimate disposal of the patients. A review of 353 similar cases admitted for radiological investigation to another military hospital yielded substantially similar results.

Many observers have shown that peptic ulcer is the major cause of sickness among the Forces. In our series 64.23% were proved to have peptic ulcer, cases with duodenal ulcers forming 85.4% of this group.

Complications such as haematemesis and perforation were conspicuous by their rarity.

In the vast majority of ulcer patients we were dealing with an exacerbation of an old-standing condition which was adequately dealt with in civil life by simple medical treatment, enabling the sufferer to continue as a useful member of the community. But the strain of Army life tends to induce recrudescence.

Patients with acute gastritis can often be adequately treated by their own medical officers, while men with either acute or chronic gastritis, if given a fresh start by a period of residence in hospital, generally do well and can safely be allowed to remain in the Army.

It is suggested that the quickening tempo of modern life is related to the increasing occurrence of the dyspepsias, especially peptic ulceration, and the question is raised whether or not Army life will add to the frequency of such disorders.

The point of highest military importance which emerges from this investigation is the large proportion of those with a definite history of peptic ulcer who on embodiment in the Army soon become a serious charge on the medical authorities.

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EXPERIENCES WITH SULPHANILAMIDE DERIVATIVES IN SOME TROPICAL CONDITIONS

BY

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A review by Buttle (1939) of the uses of sulphanilamide derivatives in tropical diseases prompts me to give my experiences with this drug not only in some purely tropical diseases, but also in some of world-wide distribution the clinical picture of which is influenced by the tropical background, and in the treatment of ordinary streptococcal invaders of pathological conditions essentially tropical in origin.

All the cases reviewed were treated in Trinidad, British West Indies, except where otherwise stated. The drugs used were sulphapyridine (M & B 693) and sulphanilamide (prontylin).

Diseases due to Filterable Viruses

(*a*) *Dengue.*—In a series of cases studied during an epidemic in Trinidad (Earle, 1939a) sulphapyridine had no apparent curative effect on the temperature, rash, or cervical gland enlargement (which is present in from 30 to 60% of cases—Castellani, 1939), arthralgia and myalgia, or state of malaise in the patient. Indeed, the epigastric pain and headache produced by the drug so exacerbated the patient's condition that its use had often to be abandoned. The danger of reducing the leucocytes in a condition in which there is already a leucopenia is a further disadvantage in the use of sulphapyridine.

Case 1.—A female English child aged 2, first seen on April 26, 1939, when she complained of generalized pain. Temperature 101° F.; a well-marked dengue rash was present. Sulphapyridine, 0.125 gramme (1/4 tablet) four-hourly, was given. An improvement was recorded on April 27, the temperature falling to 99° F.; but it subsequently rose again, giving the saddle-back type of curve (Megaw, 1937). Recovery was uninterrupted. Here, although at first sight it might be thought that the drug had had a curative effect, it was obvious that it had no influence on the course of the disease.

Case 2.—A female aged 17, English, seen on February 2, 1939, during the dengue epidemic, when she had generalized body pain, headache, and enlargement of the submaxillary and superficial cervical lymphatics. Temperature 103.8° F., pulse rate 126. A red flush over chest and face was seen. Sulphanilamide 2 grammes (4 tablets) was given at once, followed by 1 gramme four-hourly. The course was continued for five days. No alteration in the patient's condition occurred, and she took the usual time to recover.

Case 3.—A Scotsman aged 35, seen on February 12, 1939, when the usual clinical signs of dengue were apparent. 1 gramme of sulphapyridine was given four-hourly. The next day the pains had greatly increased and epigastric pain, nausea, and vomiting were present. The drug was suspended; the patient's condition improved after twenty-four hours, and he made an uninterrupted recovery.

(*b*) *Lymphopathia Venereum.*—The beneficial effects of sulphanilamide compounds in my practice have already been described (Earle, 1939b, 1939c, 1939d). Briefly, good results may be expected in early cases, before fistula formation. But even in later stages or when fistulae have formed some improvement may result. Lymphogranulomatous papillae of the vulva and rectum are reduced in size and indurated strictures of the rectum become softer and therefore amenable to dilatation.

Ulcerative Granuloma

The action of sulphanilamide alone on ulcerative granuloma, although favourably reported on by Ross (1939), has in my experience proved unsatisfactory. When combined with injections of fouadin (a complex salt of trivalent antimony with a pyrocatechin derivative) the results are much more encouraging (Earle, 1940–1). The treatment consists of a course of sulphapyridine, 3 grammes daily for five days, the course being repeated after an interval of three to four days. At the same time the standard course of fouadin, injected intramuscularly, is given. (Initial dose 1.5 c.cm., rising to 5 c.cm.; total dosage, 75 c.cm.) The injections are made every second day.

Tropical Pyomyositis

The action of sulphanilamide in this condition has already been described (Earle, 1939e). The standard dosage of the drug may be given, and good results are to be expected.

Tropical Ulcer

(*a*) *Typical Tropical Ulcer.*—Sulphanilamide is of value only in very early ulcers or pre-ulcerative papules of the idiopathic type (Earle, 1940a). It is of very limited value in old-standing ulcers.

(*b*) *Tropical Ulcer Associated with Popliteal Abscess.*—I group separately the case described below, as I have only once seen tropical ulcer associated with popliteal abscess in all the cases of this ulcer I have studied in Trinidad. This type of case is common among Chinese coolies at Ocean Island (Central Pacific) and among native Nauruans at Nauru. Possibly this form of tropical ulcer differs from the ordinary tropical ulcer in aetiology.

Case 4.—A male negro aged 14, first seen on June 22, 1939, when examination showed a tropical ulcer of the left foot associated with a popliteal abscess of the same side. Sulphapyridine, 2 grammes daily for five days, was given. On June 30 the popliteal abscess was almost healed; the course of sulphapyridine was repeated, and on July 11 both abscess and ulcer had healed. (Cod-liver oil was used as a local application in this case.)

Streptococcal Infection Implanted on to Fungous Diseases

In the Tropics certain fungous diseases appear to be readily infected by streptococci.

(*a*) *Intertriginous Ringworm.*—The infection caused by *Trichophyton* (*Epidermophyton*) *interdigitale* often leads to severe cellulitis or severe ulceration or maceration of the feet, due to a secondary streptococcal infection. I have found it advantageous to clear up the secondary infection with sulphanilamide before proceeding to a radical cure of the fungous condition.

Case 5.—A Chinese clerk aged 30, first seen on January 10, 1939, when he complained of pain and swelling of the left foot. On examination there was a well-marked ringworm of all the interdigital clefts, with cellulitis involving the whole foot. Sulphapyridine, 3 grammes daily for six days, was given, and magnesium sulphate and glycerin were applied to the open lesions. On January 19 the cellulitis had cleared up, and local treatment (Castellani's fuchsin paint) could be started.

Case 6.—An English storekeeper aged 40, seen on December 3, 1939, when he complained of severe ulceration of the interdigital clefts and soles of both feet, this condition supervening on "athlete's foot." Sulphapyridine, 4 grammes daily for four days, was given. The course was repeated twice, two-day intervals separating the courses. At the end of these courses the secondary infection had healed sufficiently for the fungous condition to be treated by *x*-ray therapy.

(*b*) *Fungous Infection of the External Ear.*—"Tropical ear," or "salt-water ear," appears to be an invasion of the external auditory meatus by the Pityrosporon of Malassez, secondarily invaded by streptococci and staphylococci. If untreated, crops of painful furuncles may occur. I found it a useful precaution to give sulphanilamide in incipient "tropical ear" and also in later cases in which furuncles had already formed. In five cases, all in young children, sulphapyridine given in an appropriate dose at the first sign of soreness following sea-bathing prevented the onset of complications. In a sixth case multiple small abscesses supervening in an infected ear were cured in three days.

Complications of Yaws

One case of severe secondarily infected yaws favourably influenced by sulphapyridine is worthy of record.

Case 7.—A negro boy aged 3, found on May 23, 1939, to be suffering from infected and ulcerative yaws of legs. Sulphapyridine, 1 gramme daily for three days, together with bismuth injection, was given. On June 1 the gross secondary infection had cleared up. Bismuth injections were continued and neosalvarsan injections were added to the treatment.

Lymphangitis

(*a*) *Non-filarial.*—Lymphangitis of obscure origin is seen in Trinidad. It is not necessarily filarial, since filaria is rare in that island (see Health Reports of Trinidad and Tobago for the years 1937 and 1938). A typical example of non-filarial lymphangitis is appended.

Case 8.—A white Trinidadian overseer aged 48, seen on March 15, 1940, when he complained of fever, and pain and swelling of the right leg. He gave a history of a shrapnel wound in the right thigh during the 1914–18 war. Since his demobilization and return to Trinidad he had had recurring attacks of lymphangitis in the affected extremity, these being at times combined with erysipelas-like attacks. The temperature was 102° F., pulse rate 96. The right thigh and calf were swollen and painful. Irregular red areas, somewhat like erysipelas patches, were scattered over the skin of the calf. Thickened, red, inflamed lymphatics were seen in the thigh, and the crural lymph glands were swollen and tender. About four inches distal to Poupart's ligament there was a deep irregular scar, which caused great distortion of the adjacent tissues. The whole extremity was extremely tender. *Plasmodium vivax* but no microfilariae were found in the blood films. Sulphapyridine, 4 grammes daily (together with atebrin, 3 tablets daily), was given, and the fever and leg infection subsided in five days.

(*b*) *Filarial.*—In this condition—filarial lymphangitis—I have recently seen very favourable responses to sulphapyridine therapy in native Nauruans. As pointed out by Buttle (1939), this beneficial action is probably due to a curative effect on secondary streptococcal invaders.

Venomous Marine Animals

(*a*) *Portuguese Man-of-war* (*Physalia pelagica*).—Stings of this animal may, in my experience, give rise to severe ulceration and necrosis of the affected parts. Cellulitis and ulceration due to secondary infection may respond to sulphanilamide, and I therefore consider it a wise precaution to give the drug prophylactically in all these stings.

Case 9.—A white Trinidadian aged 21, seen on November 2, 1939, immediately after leaving the sea. The chest, abdomen, back, and arms were covered with scores of lesions from the tentacles of a Portuguese man-of-war. Sulphapyridine, 2 grammes, was given at once, followed by 1 gramme four-hourly for two days. No complications occurred.

Case 10.—A Chinese aged 23, seen on July 6, 1939, when he displayed severe cellulitis of the right forearm following a sting by a Portuguese man-of-war. Sulphapyridine, 4 grammes daily, was given. Recovery occurred within a week.

(*b*) *Sea-urchins.*—Spines of the white sea-urchin (*Tripneustes esculentus*), known in Barbados as the "sea-egg," may give rise to suppuration if not completely

removed. The use of sulphapyridine in such cases has already been described (Earle, 1940b).

(c) *Catfish.*—The spines of the catfish of Trinidad may produce localized cellulitis, ulceration, or gangrene. Sulphanilamide should be given prophylactically if possible.

Case 11.—A negro aged 14, seen on January 7, 1939, when he showed a cellulitis of the right hand due to a prick from a catfish spine. He was given sulphapyridine, 3 grammes daily, for two days. Cure was reported on January 9.

(d) *Barracouda.*—Bites from this fish often suppurate, and should receive prompt sulphanilamide therapy.

Case 12.—A Venezuelan aged 40, seen on January 8, 1939, when he displayed an infected barracouda bite of three days' duration. The area bitten was surrounded by a zone of ulceration and cellulitis. Sulphanilamide, 1 gramme thrice daily, was given, and the wound was dressed with magnesium sulphate and glycerin. On January 11 marked improvement was noted, and cure was complete on January 18.

Venomous Arthropoda

(a) *Insecta.*—(i) Chigoe Disease.—Ulceration and cellulitis surrounding the gravid female chigoe (*Tunga penetrans*) may respond to sulphanilamide therapy. I have seen three such cases react satisfactorily in this manner. (ii) Culicoides Bites.—Prophylactic treatment of bites of various Culicoides—*C. amazonius, C. furens, C. stellifer,* and *C. diabolicus* (Myers, 1935; Adamson, 1939)—which in Trinidad may be the starting-point of a tropical ulcer, has already been described (Earle, 1940a).

(b) *Arachnida.*—Several cases of encrusted scabies (gale norvégienne) have responded well to sulphanilamide therapy combined with local treatment with mitigal (dimethyl-diphenylene disulphide).

Case 13.—An East Indian labourer aged 20, seen on March 10, 1940, when he had encrusted and septic scabies of the palms, abdomen, penis, and scrotum. Sulphapyridine, 3 grammes daily, together with mitigal locally, was given. Cured in ten days.

(c) *Myriapoda.*—Severe cellulitis and ulceration which may follow bites of the centipede (? *Scolopendra gigantea*) have been controlled by sulphanilamide. Four successful cases have been noted, of which one is here described.

Case 14.—A negro labourer aged 30, seen on January 17, 1940, with severe cellulitis of the left hand following a centipede bite on the previous day. He was given sulphanilamide, 1 gramme thrice daily. The infection subsided in four days.

Beriberi

Bearing in mind the possible association of a bacterial exotoxin with vitamin B_1 deficiency in the production of beriberi (Low, 1936; Joyeux and Sicé, 1937), I tried the effect of sulphanilamide in a case of B_1 avitaminosis associated with cardiac lesions and oedema of the feet.

Case 15.—A female East Indian aged 25, first seen on January 4, 1939, when she complained of tingling and loss of sensation in the legs and feet, swelling of the feet, dyspnoea on slight exertion, and general weakness. The date of onset of the disease was uncertain. Examination showed a poorly built woman. The lips and conjunctivae were pale, teeth carious, and tongue furred. Firm oedema of both feet, dilatation of the right heart, and systolic murmurs were present. Pulse rate 96, tension low. Sensation of light touch was impaired in both feet and calves. Ankle-jerks were sluggish, knee-jerks were present. Ankylostome ova were observed in the stools. No malarial parasites were found in the blood. Anti-hookworm treatment was started at once. Vitamin B_1, 5,000 units daily, was injected intramuscularly for a week, and sulphanilamide was given orally for five days. On January 7 the patient had less dyspnoea and less oedema of the feet. A second course of sulphanilamide was given after three days' interval and vitamin B_1 every second day. The patient made an uninterrupted recovery.

It is of course useless to draw any conclusions from an isolated case history. However, in cases of infantile beriberi seen recently in the island of Nauru—the patients sometimes being desperately ill, showing head retraction, spasticity of the limbs, Kernig's sign, and mental confusion, in addition to liver enlargement and hydrocele—dramatic results often followed lumbar puncture and intrathecal and intramuscular injection of large doses of vitamin B_1 combined with sulphapyridine by mouth. The vitamin used alone appeared to produce far less satisfactory results. Confirmatory work is obviously necessary in this obscure condition.

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LABORATORY INFECTION WITH BRUCELLA ABORTUS

BY

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The report by Huddleson and Munger (1940) of an epidemic of brucellosis in Michigan State College due to laboratory infection with *Brucella melitensis* raises in a dramatic way the problem of dissemination and the possible portals of infection in man of the pathogenic *Brucella* group.

Three Recent Cases

In this connexion the experience in my laboratory is perhaps worth recording, although in this case infection was due to the less virulent *Br. abortus*. Case 1 (H. N. G.) arose two years after experimental work had been in progress with a strain of *Br. abortus* originally isolated from a human case of undulant fever. The organism, after primary isolation in liver broth in an atmosphere of 10% CO_2, had been subcultured on plain media (agar or glycerin-agar) almost daily throughout this period, without any animal passage, and latterly grew rather better in air than in 10% CO_2. Careful precautions against accidental infection were taken, and the only direct exposure was in making frequent colonial counts from open agar plates, and in preparing and diluting small volumes of bacterial emulsions in saline from agar slopes. The attack of undulant fever did not arise after any unusual procedure or undue exposure, or after any known accidental contamination of the skin or laboratory benches. It followed a severe course, and though a trial of most of the therapeutic measures described was made, it subsided naturally after three months, immediately following the most severe pyrexial period of the illness. Sulphanilamide treatment was not, however, adequately carried out owing to sensitivity to the drug, which on one occasion produced an almost complete amblyopia lasting several hours. In the fourth week of convalescence a severe and protracted "myositis" of the lumbar muscles arose. There was no pyrexia, and the lesion was possibly allergic in nature.

Work was restarted with the same strain of organism two months after recovery, with more stringent precau-

tions than before, particularly with regard to sterilization of the benches after contact with glassware containing *Br. abortus* cultures, hand and arm ablutions, and general alertness as to the risk of infection. Gloves were worn, possible contamination by splashing was rigorously guarded against, and the bench was covered with izal for twenty-four hours after each session. Nevertheless a further case arose in the senior laboratory assistant, eleven months after the onset of the first case (i.e., after subculture of the strain for three years). This person was exposed to the organism only in the periodic preparation, from Roux bottles, of culture washings, which were poured slowly through a very wide glass funnel into an Erlenmeyer flask. At the time of infection a sulphanilamide-resistant strain which had developed from the stock strain after culture in sulphanilamide broth (Green, 1940) was being grown in bulk in Roux bottles. It is of interest that the strain of *Br. abortus* obtained from a blood culture previous to sulphapyridine treatment still retained about the same degree of resistance to sulphanilamide as the original infecting strain. This case ran a less severe course than the first, but did not become apyrexial for three months, though there was no serious relapse after giving an intensive course of sulphapyridine one month after the development of clinical symptoms.

The third case was that of another laboratory assistant, whose illness started one month after that of Case 2. He had assisted Case 2 in preparing the washings from the Roux bottles, but had not been near a culture of *Br. abortus* for one month, as all work with this organism was completely suspended and the preparation room was cleaned and disinfected when Case 2 was diagnosed. He also had a typical, fairly severe attack of undulant fever, which subsided naturally after about four months' illness.

Possible Source of Infection

There was, of course, nothing in the nature of an epidemic infection, and infection in every case may have occurred through some recognized channel such as a skin abrasion, droplet infection, or from contaminated fingers to the mouth. In all three cases, however, the individuals were not aware of any such contamination, and the second and third patients (in whom a great degree of caution had been induced by the occurrence and history of the first case) were certain that such contamination did not occur. Undoubtedly close contact with cultures was necessary for infection, as no case occurred in other members of the laboratory staff who were not working with the organism, whilst one member had assisted in the work for over two years without being clinically infected, though his serum agglutinated at one time at a titre of 1 in 100.

It is suggested as a possibility (without any concrete evidence) that infection was due to inhalation of contaminated air in the vicinity of large concentrations of *Br. abortus* growing on solid media. It is conceivable that, where the cultures had become rather dry, air currents (induced by Bunsen burners, etc.) could dislodge organisms from surface cultures. It should be noted also that Cases 2 and 3 were infected by a sulphanilamide-resistant strain. A large proportion of the cultures to which Case 1 was exposed were also grown in and subcultured from media containing sulphanilamide. It is therefore possible that after exposure to sulphanilamide the organism had become more virulent or invasive than the stock strain.

Commentary

This record does not supplement our knowledge of the alternative paths of infection in man by the pathogenic *Brucella* group, which in the natural infection is commonly via the alimentary tract. It is published rather as a warning that *Br. abortus* under laboratory conditions is a potentially highly dangerous organism and that the conditions governing its infectivity are still not completely understood. It is of particular interest that in Case 3 clinical symptoms did not appear until one month after any possible direct exposure to *Br. abortus* cultures, which would fix the incubation period in this case at a minimum of one month.

The cause of the outbreak of *Br. melitensis* infection occurring at Michigan appears superficially much more mysterious than that described here, nor do the present observations throw any light on it, except to add some support to the possibility of air-borne infection. They do, however, indicate that there may be another quite unrecognized mode of infection, the nature of which, from both the academic and the practical standpoints, it would be of value to know. Progress might be made if the details of laboratory infection of all types were more often reported.

Summary

Three cases of undulant fever are reported, due to laboratory infection by a stock strain of *Br. abortus* which had been continuously subcultured for two to three years.

In two cases the infecting strain was known to be sulphanilamide-resistant.

In no case was the exact site of entry of the organism established, and it is suggested that air-borne infection from surface cultures is a possibility.

A grateful acknowledgment is due to Prof. E. J. Wayne, who undertook the medical care of two of the cases.

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A CONVULSION DURING NON-CONVULSIVE FARADIC SHOCK THERAPY

BY

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Following on the promising results obtained by Berkwitz (1940) of Minneapolis, an investigation is being carried out on the therapeutic effect of non-convulsive faradic shock treatment in mental disease. This method is reputed to give as good results as the ordinary cardiazol or electrical convulsive therapy without the dangers consequent on the convulsions—namely, fractures of vertebrae, lesions of the brain, and abscesses of the lung—reports of which are becoming ever more frequent (Polatin and others, 1939; Bennett and Fitzpatrick, 1939; Hamsa and Bennett, 1939; Blair, 1940).

The apparatus and technique used are very similar to those employed by Berkwitz. The faradic current is produced by an ordinary induction coil such as is used in most massage departments for muscle stimulation; and this is driven by a 6-volt dry battery. The electrodes are applied to the patient's temples, the current is switched full on, and then fifteen shocks of half a second's duration are given at intervals of half a second, varying the on–off key of the coil to make and break the current. During this period the patient is fully conscious. Each shock produces a spasmodic contraction of the muscles of the face and neck, and is described as feeling "like a bang on the head." Immediately after the series of shocks a 5% solution of pentothal sodium is injected intravenously. Enough is injected to produce a surgical anaesthesia lasting 5 to 10 minutes, and while the patient is coming round he is in an ideal state for psychotherapy. Apparently the faradic shock shakes him up and establishes

rapport, and the barbiturate produces a state of increased suggestibility. Intensive psychotherapy in the form of general and specific suggestion and persuasion is carried out in every case.

The results so far obtained are promising, but sufficient cases have not yet been treated to allow of a statistical evaluation of the efficacy of the method. It is, however, considered advisable to publish the following case at this stage as an illustration that this treatment is not entirely free from risks. Also it shows the occurrence of a hitherto undescribed sensitization to the faradic current, as a result of which a major convulsion was produced by a potential only a fiftieth of the strength of that used in normal electric convulsive therapy (Berkwitz, 1940).

Case Report

A married man aged 30, a metal-spinner, was admitted to the Winson Green Mental Hospital on August 21, 1940, as a case of acute mania, following on various environmental difficulties. There was no personal or family history of epilepsy or mental disorder. He was elated, overactive, and euphoric. He showed a well-marked "flight of ideas" and had visual and auditory hallucinations. He was disorientated for time and place, and was completely devoid of insight into his condition.

Three weeks in hospital caused no appreciable change in his condition. On September 2 a course of prolonged narcosis was started, but on its completion he appeared much the same. On September 24 some carious teeth were extracted, and on November 18 tonsillectomy was performed. By that time he had become a little quieter, but there was no significant improvement. He was still excited, disorientated, and acutely hallucinated. On January 11, 1941, a course of faradic shock therapy was started. Treatment was carried out once daily for six days. An immediate improvement was noted. After the second treatment he was much quieter and became correctly orientated. After the third session he was allowed up out of bed. After the fourth session he started to do some light ward work and his hallucinations had disappeared. The same strength of current was used every day, but it was noticed that as his mental condition improved the effect of the shocks seemed to increase. He became apprehensive of the treatment, but since he was now fairly rational it was easy to persuade him to continue.

On the fifth day the shocks had a very marked effect, and he screamed and struggled each time the current was switched on. When he recovered he seemed almost normal and discussed the various factors which had led to his breakdown. He described his illness as having been like a dream and his hallucinations as having been excessive imagination. On the sixth day he was very apprehensive, and so it was decided to cut down the current to three-quarters of the usual dose. But despite this his reaction to the shocks seemed greater than ever, and after twelve shocks he went into a convulsion which resembled in every way that usually produced by azoman or cardiazol. It consisted of a tonic stage followed by a well-marked clonic stage, the whole lasting two minutes. During this time he became pulseless and very cyanosed, his face eventually going quite black. At the end of the fit an intravenous injection of pentothal sodium was given as usual, and he woke up twenty-three minutes later with complete amnesia for the actual period of treatment.

Subsequently he has appeared quiet and rational and has discussed his illness at great length with perfect insight; but he has complained bitterly of pain and tenderness in his upper dorsal vertebrae. He says he feels as though he has been "kicked in the back." A radiograph showed no abnormality.

In view of his satisfactory mental condition and the possibility of further convulsions producing crush fractures of the vertebrae it was decided to terminate the treatment at this stage.

Discussion

Berkwitz (1940) has shown that the resistance of the patient's head between the two electrodes is fairly constant at 10,000 ohms and that the average current flowing during a shock is about 10 mA. A much higher current than this is often used clinically in muscle and nerve stimulation without producing tissue damage, so the chief benefit claimed for faradic shock treatment is its safety, in that the current used is too small to produce burns or unconsciousness or convulsions.

The therapeutic efficacy of the treatment in the above case is undoubted. A bad case of acute mania which had resisted other forms of non-convulsive therapy was brought back to normality within six days; but with increasing normality came a strange increase in sensitivity to the faradic current, and finally a major convulsion, with all its dangers, was caused by a current three-quarters of the normal strength—a current which other patients can tolerate with equanimity. It would appear as though some cumulative physical change which was associated with the improvement of his mental condition was taking place in the patient's brain, and that this change also involved his sensitivity to faradic stimulation.

Further investigation along these lines may well lead to some satisfactory explanation of the mode of action of shock and convulsive therapy in mental disorder.

Summary

A brief account is given of faradic shock therapy. The reason for its preference to other forms of similar therapy is that it normally does not give any dangerous convulsions.

A case of acute mania successfully treated by this method is described.

An account is given of how the patient became increasingly sensitized to the faradic current until eventually a small current produced a major convulsion.

My thanks are due to Dr. J. J. O'Reilly, medical superintendent of Winson Green Mental Hospital, for his help and for permission to publish an account of this case.

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Clinical Memoranda

Convulsions under Anaesthesia

As the subject of ether convulsions has been much to the fore of late, and there is little agreement among writers as to the pathology or treatment of this grave condition, it may be of some value to record the first case of this kind that has occurred under my care.

CASE REPORT

The patient, a weedy boy aged 12, was admitted to hospital extremely ill with acute appendicitis of three days' standing. He appeared severely toxic; the temperature was 100°, the pulse 124, and he had marked right-sided abdominal rigidity. Cardiac examination showed *gross dilatation of the heart to the anterior axillary line*, associated with a soft systolic murmur all over the praecordium. This appeared to be the result of rheumatic carditis, possibly following a severe attack of measles at the age of 6.

Premedication consisted of atropine sulphate, 1/100 grain; and owing to his extremely poor general condition an intravenous glucose–saline drip was started before operation and was continued. Anaesthesia was quietly induced with 5 c.cm. of ethyl chloride and maintained by open ether on a lint-covered mask, covered again by lint and towel. Oxygen was administered under the mask continuously, and at no time was there any sign of cyanosis or hyperoxygenation. The anaesthesia

was maintained at the level of the second plane of the third stage, and no difficulties arose during the first hour.

Owing to the situation of the appendix and its condition, and that of the abdominal contents, the operation proved difficult and prolonged; the pulse became gradually more rapid until at the end of an hour it was over 200 and almost uncountable. Suddenly at this stage convulsions started in the right leg, immediately becoming general, rapid, and violent. While evipan was being prepared I removed the extra coverings from the mask and administered a few drops of chloroform, without any change occurring in the convulsions. I then removed the mask and ran in oxygen through the airway. With some difficulty, owing to the convulsions, I succeeded in introducing 2 c.cm. of evipan into an arm vein. Cessation of the convulsions was immediate and dramatic. I then introduced into the drip-tube a further 3 c.cm. of evipan, and as the pulse was very poor I also added to the drip-bottle 2.5 c.cm. of coramine. The patient's condition improved rapidly; the pulse fell to 184, and the operation was proceeded with, being completed at the end of two hours. Oxygen administration had been continued, and only a few occasional drops of ether on the mask were required to maintain a sufficient depth of anaesthesia. The patient returned to bed a good colour, with a pulse of 180.

This case is of further interest in that half an hour after his return to the ward a further convulsion supervened. This was a single tonic spasm of the whole body, with face florid, tongue protruding, eyeballs turned up, and head retracted. The pulse was imperceptible. Oxygen was administered through a nasal catheter, and in about a minute the convulsion passed off; the pulse returned and improved quickly, and had settled down to 144 in fifteen minutes. The intravenous drip was continued and 1/6 grain of morphine was given hypodermically, and the patient settled down to a perfectly peaceful return to consciousness. Next morning (twelve hours later) his pulse was 124 and the temperature 100°, and there was amazing clinical improvement. No post-anaesthetic complications ensued beyond slight chestiness, which quickly cleared up.

Of all the possible causes of convulsions that have been suggested the outstanding features in this case appeared to be (1) toxaemia; (2) cardiac defect and poor general condition; (3) prolonged operation. As to the cause of the second convulsion, I should be glad of any suggestions that might elucidate its cause and nature, and would like to be informed whether in cases of this type the preliminary administration of an intravenous barbiturate or even a suitable dose of one of the slower-acting barbiturates might have been an effective preventive measure.

Altrincham. H. A. LOGAN, M.B., B.Ch., B.A.O.

An Unusual Case of Cystic Disease of the Pancreas

The following case seems to be uncommon enough to merit being placed on record.

CASE REPORT

At 11 a.m. on March 7, 1940, I was called in to see a Hindu boy aged 11, a relative of one of our compounders living in hospital premises. He complained of intermittent pain in the abdomen and of an oval lump, about half the size of his head, extending downwards from the right costal margin. He had vomited twice. The lump was tender, dull to percussion, tense, and slightly movable, and its relations and attachments were uncertain. It was clearly defined to the right, but less so to the left, and it was possible to insert the fingers between it and the liver. The rest of the abdomen was not tender or "boarded." The pain, though fairly severe when present, was not sufficient to double him up. His temperature was 100°, rising later to 101.4°, and his pulse 120, rising later to 140. He had been all right after his evening meal the day before, but during the night vague abdominal pain had set in, disturbing his sleep from time to time. In the morning his father had discovered the lump in his abdomen, which apparently had not been there before. There was a history of worms having been passed some time previously.

On examination the faeces contained no ascaris ova, and the urine was normal. The leucocyte count was 20,000 per c.mm. Nothing abnormal was found per rectum. A radiograph was blurred owing to the child's inability to hold his breath, but it showed an opaque shadow at the site of the lump.

The differential diagnosis seemed to be between (1) obstruction due to intussusception, impaction of a mass of ascarides, or internal strangulation, and (2) retrocaecal appendix abscess; none of these, however, appeared to fit the clinical condition accurately. We gave the child an anaesthetic (ethyl chloride) and washed out his stomach and bowels, examining him again while under the anaesthetic, without affording him any relief and without eliciting any further information.

As his condition was getting worse—pulse, temperature, and respirations rising, and distress increasing—I operated at 8.30 p.m. A free right paramedian incision gave insufficient access to explore the lump adequately, but it was definitely located behind the ascending colon, which it had been compressing against the anterior abdominal wall. The bowels, appendix, and gall-bladder were healthy, and there was no free fluid in the peritoneal cavity and no apparent cause of the symptoms of obstruction except the pressure of the lump against the ascending colon and duodenum.

The lump itself was obviously cystic, and at first sight suggested the possibility of hydronephrosis, but it was found definitely not to be associated with the kidney. It was made up of innumerable loculated thin-walled cysts. I aspirated two of these from a point lateral to the ascending colon. One contained altered blood and necrotic material and probably bile, and the other contained clear fluid slightly stained with fresh blood. This aspiration reduced the size of the mass sufficiently for a better exploration, whereupon it became clear that the tumour was associated with the head of the pancreas and had worked its way retroperitoneally behind the ascending colon and still further to the right. The peritoneum covering the pancreas had an unhealthy "sago-pudding" appearance.

The patient's condition by this time was bad, and it seemed impossible to dissect out the cystic mass in time, so I decided to aspirate as many of the cysts as I could reach from the right side of the ascending colon, and trust to Providence for the result. The cysts varied in size from a pea to an egg. Some contained clear fluid. Others were blood-tinged or were full of altered blood, bile, and necrotic material. By the time I had aspirated as many cysts as I could reach the head of the pancreas had become, as it were, deflated. I inserted a drain in the right loin and closed the wound. Several injections of soluseptasine were given as a protection against possible suppuration, as well as anti-shock treatment.

I expected the patient to die, but actually he had no more trouble than could be expected from the trauma of the operation itself. The discharge from the drain ceased on the second day. His temperature, pulse, and respirations were normal from the third day, and thereafter he made an uneventful recovery, and when I last saw him on May 2 he was remarkably well. He had no discomfort, and no sign of the tumour could be made out.

COMMENTARY

I suggest, as the most probable explanation of the case, that haemorrhage and inflammation occurred in the head of the pancreas, which was already the seat of cystic disease—cystic adenoma. The cystic mass probably grew in size, working its way over to the right and displacing the peritoneum covering the duodenum, thereby causing pressure on the duodenum and pressure-obstruction to the outflow of bile and pancreatic juice from the common bile duct and so damming them back into the pancreas. This would cause digestion and haemorrhage. It also explains the presence of bile in some of the cysts, and the sudden increase in the size of the tumour clinically noted. The case, however, seems so unusual that I would be most interested if some expert surgical pathologist would comment on it.

I am obliged to Dr. Dyson, chief medical officer of the M. & S.M. Railway, for permission to publish the case, and to my Indian medical staff for their part in dealing with it and discussing it with me.

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Reviews

DIAGNOSTIC BACTERIOLOGY

Methods for Diagnostic Bacteriology: A Complete Guide for the Isolation and Identification of Pathogenic Bacteria for Medical Bacteriology Laboratories. By Isabelle G. Schaub, A.B., and M. Kathleen Foley, A.B. (Pp. 314. 15s. net.) London: Henry Kimpton. 1940.

This is a new kind of book. It sets out simply to describe the methods employed at the Johns Hopkins Hospital, Baltimore, for identifying bacteria in material from patients, and the fact that this exposition occupies over three hundred pages is due to leaving every left-hand page blank for the user's own notes and to the thoroughness with which the authors' task has been carried out. They begin by describing the methods employed for each kind of specimen, and follow this with instructions for identifying main types of bacteria. A section on serological diagnosis deals only with agglutination and precipitin tests, and gives particular attention to determining the type of pneumococci in various materials. A concluding section describes the preparation of culture media, stains, and other reagents.

Probably no two institutions use quite the same methods in this kind of work, and every bacteriologist has his foibles in technique: his methods may in some points be intrinsically superior to other people's or merely better for him because he is better practised in them. Hence no one is likely to admit that each of the proceedings described here is the best of its kind. Points in this book most likely to be criticized are the omission of bile or bile salts from media for cultivating typhoid bacilli from blood, the use of methylene-blue for staining diphtheria bacilli (it is impossible to dispute that Pugh's or Albert's stain gives a much more characteristic picture); a method for "washing" sputum which does not wash it at all but only employs rather cumbrous means to make a saline suspension of the whole specimen; the use of the wire loop as a spreader (many people find a bent glass rod much more serviceable); a hanging-drop technique which does not seal the preparation and therefore removes its chief advantage, which is that it can be incubated; and the absence of any reference to degrees of agglutinability in bacterial suspensions and their standardization. A more general criticism is that cultural methods advocated are too complex: there are shorter roads to the same results, and intelligent forethought or the study of direct films should enable the bacteriologist to use a single culture medium instead of three, as sometimes advocated here. On the other hand, almost everyone has probably something to learn from this book; it is of great interest as revealing the methods employed in a leading laboratory in the U.S.A., and its unique form renders it a ready source of information in difficulties which arise almost daily at the laboratory bench.

THE LIFE OF AN INVALID

The Glorious Bondage of Illness. By France Pastorelli. A translation of *Servitude et Grandeur de la Maladie.* Preface by Pierre Sanson, O.P. (Pp. 224. 2s. 6d. cheap edition.) London: George Allen and Unwin, Ltd. 1941.

The tragic nature of this book is enhanced by representing a partial failure as an unqualified success. It is the record of the struggles of an able woman to adapt herself to the life of an invalid when suddenly arrested in a musician's career by a form of heart disease, involving frequent and severe anginal attacks, which it is stated "keeps her life in constant jeopardy." The first part is called "The Drama of the Inner Self," which the author herself thinks ought not to see daylight but of which, owing to the solicitude of friends, she publishes the less intimate parts. It is written in a spirit of religious exaltation. The second part, "The Drama of the Environment," however, shows that the triumph over the self has not been completely successful, for the greater part of it is occupied by vivid complaints of the attitude which the healthy adopt towards the sick. Many of these are doubtless justified, but they do suggest a sublimation less perfect than is claimed by the writer of the preface. However, to make amends, the last chapter is devoted to some useful and helpful advice to other invalids. The English title rather exaggerates the tone of the original French one, *Servitude et Grandeur de la Maladie,* but we cannot help feeling that sentences such as this have an element of, probably unconscious, dramatization: "The agony in the Garden of Gethsemane, the help vanishing when the strong appeal is made, the nearest and dearest friends asleep, the reiterated protestations and denials of St. Peter, these are tragedies which we have lived through again and again." The impression is left on the mind that the author is right in saying that a trench is dug by illness between the invalid and the healthy; indeed, the trench seems so wide in these pages that one wonders how it can really be bridged. "'Take care,' a friend said to me in words which showed that she did not in the least understand. "You seem to think that sickness is in itself a higher kind of life.' 'Certainly not!' I replied." We wonder whether that friend was wise in trying to underrate a compensatory mechanism.

The author naturally has a wide experience of doctors and speaks well of the majority. She gives some good examples, however, of things that doctors should *not* say to patients.

PICTORIAL AIDS TO ANATOMY

Illustrations of Regional Anatomy. By E. B. Jamieson, M.D. Third edition. Section I. Central Nervous System. (49 plates. 7s. 6d., plus 6d. postage.) Section II. Head and Neck. (64 plates. 15s., plus 7d. postage.) Section III. Abdomen. (41 plates. 6s., plus 5d. postage.) Section IV. Pelvis. (34 plates. 4s., plus 5d. postage.) Section V. Thorax. (31 plates. 4s., plus 5d. postage.) Edinburgh: E. and S. Livingstone. 1941.

Notwithstanding difficulties arising from the demand for skilled labour and material during wartime, the first five sections of Dr. E. B. Jamieson's *Illustrations of Regional Anatomy* have been duly produced, and contain many valuable additions and improvements. No fewer than 300 colour-blocks have been prepared for this edition. Some of the enlargements showing small details of parts such as the middle ear, or the relations of the vessels to the gall-bladder and its duct in the region of the first part of the duodenum, are especially worthy of note, and also the beautifully executed plates showing the sacral plexus on a dark background. Some of the plates described as "schematic" are perhaps too conventional, and give unmistakable evidence of having been composed to fit in with common conceptions rather than the more ideal method of drawing from actual specimens and afterwards, when necessary, simplifying by the suppression or omission of unwanted details. The general excellence and popularity of this work are, however, evidenced by its large sale, estimated to be over 45,000. This is probably due in the main to its value as a pictorial aid to a quick comprehension of the necessarily lengthy descriptions of anatomical textbooks. The latter are, however, indispensable for gaining a sound knowledge of the significance of the relation of the structures which are so skilfully displayed in the coloured plates. Verbal descriptions, moreover, provide an opportunity of giving some indication of the practical application of the topographical knowledge acquired by dissection

or the use of illustrations. It is also important that it should be generally realized that there is a real danger of making anatomy too easy, and that parts seen during operation have a very different appearance from that which might be expected from impressions gained solely from diagrams and coloured plates. The plates therefore must be regarded as being supplementary to practical work in the dissecting room, carried out with the help of a good descriptive manual, rather than being complete in themselves. Employed in this way and as a reminder of knowledge previously acquired they should be of great value to both student and practitioner.

CHEMISTRY AND MEDICINE

Chemistry and Medicine. Papers presented at the Fiftieth Anniversary of the Founding of the Medical School of the University of Minnesota. Edited by Maurice B. Visscher, Professor of Physiology at the University of Minnesota. (Pp. 296. 28s.) Minneapolis: University of Minnesota Press; London: Oxford University Press.

The University of Minnesota in 1939 celebrated the fiftieth anniversary of the establishment of its medical school, and has published in volume form a series of papers presented on that occasion. These deal with the influence of chemistry on the modern development of medical science. Various selected aspects of this subject are discussed, and the volume provides interesting evidence of the extent to which medicine has become dependent upon chemistry.

Many of the most important recent advances in medicine are generally recognized as examples of applied chemistry. Sulphonamide therapy, which is described by Prof. Long, is an example of this type. The dependence of the science of vitamins on organic chemistry is equally clear, and in this case a table provided by Prof. Smith is of interest in that it demonstrates the remarkable acceleration that has occurred in the isolation and synthesis of vitamins. The existence of the three original vitamins—A, B, and C—was demonstrated about 1912, but their synthesis was not achieved until twenty-five years later. On the other hand, vitamins B_1 and K, proved to exist in 1936, were isolated and synthesized within three years. The table actually lists six vitamins that have been synthesized during the past five years. This remarkable acceleration in progress is due to the great advances in analytical methods, chief among which is the perfection of methods of spectrum analysis. Endocrine secretions are not dealt with in this volume, but their history shows a similar, if less spectacular, acceleration in the rate of progress due to advances in organic chemistry. The dependence of chemotherapy, "vitaminology," and endocrinology upon organic chemistry is so well recognized that it needs little comment.

Other chapters in the book, however, summarize the importance of chemistry in fields where its influence is not so obvious. Prof. Heidelberger shows that immunity is slowly but steadily being reduced to a chemical problem. This is largely due to the work of Landsteiner, who found that artificial antigens could be constructed by combining proteins with chemicals. This work, combined with microchemical analysis, has made it possible to study the antigen–antibody reaction as a problem in quantitative chemistry and to write empirical formulae for the composition of the precipitates resulting. The subject of filterable viruses, discussed by Prof. Green, is another field which is influenced profoundly by protein chemistry, as in this case it has been found possible to crystallize viruses and to estimate their molecular weight. Finally, Prof. Cannon, in a short article on the chemical mediation of nerve impulses, assembles a strong case in support of the view that the transmission of impulses from a nerve cell to another cell is served by the liberation of acetylcholine and adrenaline. This is, of course, a highly controversial subject, but the author outlines his case with remarkable clarity. The transmission of nerve impulses was regarded only a few years ago as a problem of electrophysics, and the possibility of treating it as a problem of organic and enzyme chemistry is remarkable evidence of the change that modern chemistry is effecting not only in medicine but in the fundamental problems of physiology.

Notes on Books

The official *Medical Register* for 1941 has now been published on behalf of the General Medical Council by Constable and Co. at 21s., post free 22s. 6d. The table printed in the introductory section shows that 2,384 names were added last year. New registrations numbered 1,323 in England, 673 in Scotland, 315 in Ireland, 57 on the colonial register, and 16 on the foreign register. The total number of names on the *Register* at the end of the year was 64,679—1,319 more than in 1939. The number of names removed from the *Register* during 1940 was 1,102; of these 1,071 were deleted on evidence of death, 24 for failure to comply with the inquiries of the registrar as to cessation of practice or change of address, and seven were struck off under the disciplinary powers conferred by Parliament on the General Medical Council.

The first edition of *The Diagnosis and Treatment of Pulmonary Tuberculosis*, by JOHN B. HAWES and MOSES J. STONE, was published in 1936 and was very favourably reviewed in these columns. The second edition recently published (Henry Kimpton, 12s. 6d.) has been revised by Dr. Stone. It is our opinion that this small volume has not gained in value by this revision. The excellent presentation of "essentials" has suffered by introducing the classifications of "childhood and adult types of tuberculosis" and "productive and exudative types of tuberculosis." In particular the latter distinction must lead to confusion in the proper application of collapse therapy. Further, in an elementary textbook in which the authors speak of "pneumothorax or 'gas treatment'" and of "thoracoplasty, or the rib operation," the wisdom of presenting a large number of radiographs might be questioned. Their choice, moreover, appears to have been little studied by either publishers or author, since some reproductions are of positives, others of negatives; some postero-anterior, others antero-posterior; some of excellent quality, others obviously of films taken either with a very poor technique or with apparatus dating from the early days of chest radiography. Despite these criticisms this remains probably the best small book on the subject in English.

Three years ago the fourth edition of *Operative Surgery*, by J. SHELTON HORSLEY and ISAAC A. BIGGER, earned our favourable comment; now a fifth edition brings it up to date and includes such recent surgical procedures as ligation of the patent ductus arteriosus, which was first successfully performed in 1938 by Gross of Boston, and an account of the operation for performing extrapleural pneumothorax, a procedure which, although originally carried out in 1891 by Tuffier in Paris, did not come into its own until about three years ago and now apparently has a definite place in the surgery of phthisis. Neurosurgery is brought up to date in a section written by Dr. C. C. Coleman, urology in that by Dr. Austin I. Dodson, orthopaedics in a section by Dr. Donald M. Faulkner, and plastic surgery in articles by Dr. John S. Horsley, jun. This delightful, clearly and well illustrated, and easily read two-volume work is the best of its kind that we know. All that we said in favour of the fourth edition, and as our American friends might graphically say, "and then some," applies to this new edition. If asked by one about to begin surgical practice to recommend a really good modern guide to its operative aspects, we should unhesitatingly name this edition of Horsley and Bigger. It is published in two volumes at £4 10s. by Henry Kimpton.

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TREATMENT OF BURNS

Interest in burns has been greatly stimulated by their increased incidence due to the war, and much discussion, not always tempered by clear thinking, is taking place as to the merits of this or that treatment. The variation in type and distribution of burns is at present resulting in personal experiences which, because of their limited nature, give a one-sided view of a large problem, and from which conclusions may be drawn having less general validity than their sponsors realize. Thus the experience of a surgeon dealing with R.A.F. personnel may be very different from that of one dealing with the victims of their opponents. Recent discussions and contributions to the medical press have shown dissatisfaction with established methods of treatment, and the war has seen already many attempts to improve upon them. At a time when there is no general agreement as to the best methods it may be well to pause and take stock of the problem as a whole.

Two features distinguish thermal from other injuries: their special danger to life if extensive, and the crippling nature of their scars in many parts of the body. The two aspects of treatment—saving of life and saving of function—cannot be separated, but either may predominate even to the exclusion of the other. There are burns that menace life but not function (for example, a large superficial body burn), others that menace function but not life (for example, burns of the hands): these examples are given with the suggestion that uniformity of treatment of burns is neither desirable nor possible. The danger to life depends on extent rather than depth of burn, and to a smaller degree on situation. Burns kill by shock, toxaemia, or sepsis. The treatment of shock due to burns is on the same lines as for other forms of traumatic shock, but often merging with shock is the peculiar state known as burn toxaemia, which, while presenting some of the features of the former condition, has additional characteristics, notably fever and evidence of liver damage. There are three theories as to the cause of burn toxaemia: first, that it is due to a disturbance of the fluid and electrolyte balance of the body; second, that it is the result of sepsis; and, third, that a specific toxin is elaborated in the burnt tissues. Elkinton[1] has shown that correction of the recognized abnormalities in the blood does not prevent the condition, and Wilson, Macgregor, and Stewart[2] have observed it in cases in which cultures from the burns and blood were sterile. The liver damage described post mortem by Wilson *et al.* and confirmed in life by liver-function tests by Wolff, Elkinton, and Rhoads[3] is suggestive of the action of a toxin and has led to the recognition of glucose as an important part of the treatment of severe burns.

[1] *Bull. Ayer clin. Lab.*, 1939, **3**, 279.
[2] *Brit. J. Surg.*, 1938, **25**, 826.
[3] *Ann. Surg.*, 1940, **112**, 158.

At the present time, however, discussion centres round the local rather than the general treatment of burns, and has become a little heated between the advocates and critics of coagulation methods. As there is a trend of opinion away from these methods it is important to remember that one of the chief claims made for tannic acid was its reduction of mortality. Wilson[4] has produced evidence of this, and McClure[5] in a recent summary of the position points out that U.S.A. statistics showed a fall in the annual number of deaths from burns after the introduction of the tannic acid treatment by Davidson, although since 1933 there has been no further fall.

The problem of local treatment depends, first, on the depth of the burn. If there is no full-thickness loss of skin good healing should follow any method that prevents sepsis. Healing, moreover, should be rapid, since except for raised epidermis there is no macroscopic death of tissue and no sloughs to separate. In this type of burn rapidity of healing may eventually decide the choice of method. Although the deep layers of skin survive they are no barrier to the entry of organisms, and it is not sufficiently recognized that infection of a superficial burn may convert a partial into a full loss of skin thickness. This risk is particularly serious when infection appears under a coagulum, since the damage may occur before the sepsis is recognized. This phenomenon can be seen in tanned donor areas of razor grafts in which there is no doubt as to the depth of the original injury. When the whole thickness of the skin and deeper structures are destroyed sepsis may be more difficult to control, and, furthermore, healing cannot take place until the dead tissue has separated. These burns present two further problems: the removal of sloughs, and the covering of the resulting defect, which often calls for skin grafting. The early separation of sloughs and repair of the defects assume special importance in those parts where function is endangered—the hands, the face, and the flexures. Now it may well be that sepsis hastens the separation of sloughs and that its prevention will delay it. Most surgeons have seen small areas of dry gangrene of the skin due to heat or pressure (both occur in air-raid casualties) which remain clean and take weeks to separate, and most, too, have noted the rapidity with which a large mass of tissue may separate from a septic pressure sore. It is likely, therefore, that the control of sepsis will throw into prominence the problem of separating sloughs, and methods of accelerating this process are already being studied. In small deep burns the slow natural progress of the lesion has led some surgeons to excise and graft immediately.

In superficial burns we require of local treatment no more than protection of the lesion from further injury, mechanical or infective, until healing is complete, and of methods which fulfil these requirements preference will be given to the quickest. In deep burns we need control of sepsis, and rapid removal of dead tissue and its early replacement by grafting or artificial stimulation of natural healing. Coagulation methods fulfil these requirements in part only. They give a fair protection against secondary infection but do not control that introduced before treatment, and it has

[4] M.R.C. Reports, 1929, No. 141.
[5] *J. Amer. med. Ass.*, 1939, **113**, 1808.

always been recognized as an essential part of the treatment that the burnt surface should be rendered sterile or nearly so by careful cleansing before the coagulating agent is applied. It has also been claimed for these methods that they provide optimum conditions for healing by splinting the affected part. This is probably beneficial in the trunk and limited areas of the limbs, but splinting of the hands for the long time during which a coagulum may remain adherent would be tolerated for no other form of injury, because of its crippling effect on function. This is one reason why the E.M.S.[6] advised that hands should not be tanned. Another is that tan contracts and may produce further damage by causing ischaemia. This has been disputed and is difficult to prove, but the splinting effect of the tan and the very long time it takes to separate in deep burns should alone condemn the method for burns of the hands.

The failure of coagulation methods to control sepsis may be eliminated by the use of drugs of the sulphonamide group, as recommended in the latest E.M.S. memorandum on burns.[7] The use of these drugs is the most important novelty in the treatment of burns, and an example of its application is described in this number by Robson and Wallace. Whether their paste has any virtue apart from its sulphonamide content is doubtful, nor is it clear why albucid is preferred to other available sulphonamides. Most of their cases are of superficial burns, and the method appears to fulfil the requirements which we suggested for this type—namely, protection of the lesion from mechanical and bacterial injury—and appears to be applicable to all parts of the body. With regard to their implied aspersion on the saline treatment, perhaps the authors have not realized that when this is properly carried out it includes dusting the burn with sulphanilamide whenever the tulle gras is changed (E.M.S. memorandum). It seems possible that with the addition of sulphonamides any method of treating burns will be improved, and even carron oil may return to favour.

Apart from the use of applications containing sulphonamides such as that described by Robson and Wallace, the most widely used alternative to coagulation at present is the saline method described in the E.M.S. memorandum. This aims at controlling sepsis with sulphanilamide and keeping the lesions bathed in physiological salt solution until healed or ready for grafting. The details vary with the part of the body burnt, but one or more daily saline baths are given to the injured parts, which are kept moist between the baths with saline dressings laid over tulle gras to prevent adhesion. It is to be hoped that before long some results will be published of this treatment, which was advocated by several speakers at a recent discussion at the Royal Society of Medicine. A variant of this method is that described by Bunyan,[8] who maintains constant bathing of the lesions in saline and hypochlorite solutions in oiled silk envelopes adapted with much ingenuity to various parts of the body. From time to time the envelope is flushed out with solution to remove discharges and debris. Two advantages are claimed for this method:- that it controls sepsis without the addition of other drugs, and that it hastens the separation of dead tissue.

It has yet to be shown that any of the alternatives to coagulation therapy are as beneficial when the burn is extensive enough to endanger life, and the E.M.S. memorandum suggests that coagulation is still the method of choice for such cases. In the war burns about which there has been dispute, however, the risk is nearly always to function rather than to life. This is particularly true of the burns of the hands and face, which are mostly caused by short exposure to very high temperatures—either flash burns, against which clothing protects the body, or flame burns as sustained by air personnel. The flash burn may involve the whole hand without anywhere destroying full thickness of skin; if this is tanned, the hand is enclosed in a semi-rigid glove which prevents movement and may, as it contracts, produce dangerous constriction. In this way a superficial burn may result in a stiff hand which takes months to recover, if it ever does. Even worse will be the stiffness after deep burns of the hands, from which the coagulum separates very slowly. It is no answer to this criticism to say that many tanned burns of the hands do very well. A small percentage of disasters is enough to condemn any method.

[6] E.M.S. Gen. 325, amendment to, Oct., 1940.
[7] E.M.S. Gen. 343, Feb., 1941 (see *British Medical Journal*, to-day's issue, p. 489).
[8] *Proc. roy. Soc. Med.*, 1940, **34**, 65.

HEALTH AND SAFETY IN FACTORIES

No one will be surprised to learn that there was a large increase in industrial accidents in the early part of the war. During the first six months the number of non-fatal accidents in factories rose by 42%, and of fatal accidents by 13%, compared with the six months from September, 1938, to February, 1939. One thinks immediately of the black-out, an experience without precedent in the history of this country, pressing hardest of all perhaps upon those engaged in industry, affecting the physical and psychological conditions of their daily work and hindering and endangering their transport. But the black-out causes its accidents outside rather than inside the factories, and in the annual report of the Chief Inspector of Factories for 1939, which has only lately been published,[9] it is placed sixth among the seven causes of increased accidents in wartime. The others are the increased number of persons employed, with extension of hours of work, neglect of safety precautions due to speeding up of production, shift of working population from relatively safe to accident-producing industries, fatigue and mental stress, and the bringing back into industry of machines in various stages of obsolescence.

During 1939 as a whole there was an increase amounting to 17% of fatal and 7% of non-fatal accidents, but there was actually a decrease of 2% in the number of accidents to young persons, one of the first-fruits of the tightening of safety conditions brought about by the new Factories Act. The industries in which accidents were most numerous were those concerned with war production. In the manufacture of aeroplanes, for example, the accident rate went up by 20%. The total number of accidents in industry

[9] Cmd. 6251. Annual Report of the Chief Inspector of Factories for the Year 1939. H.M. Stationery Office. (1s. net; postage extra.) 1941.

(meaning those which were either fatal or disabled the workman for more than three days) was 193,475, of which 1,104 resulted in death. The largest number (25,358) were due to persons falling; building operations contributed most to this form of accident. There were 6,742 accidents in the cotton industry, but only 23 were fatal, and in the woollen industry, with 3,884 accidents, the death roll was only 18. One fact which has emerged from an inquiry into the subject is that the number of accidents reaches its maximum in the middle of the morning or afternoon—that is to say, some three hours after starting or restarting work. The more serious by-product of the black-out so far as workers in factories are concerned is the effect on health. In many cases, at the beginning of the war, factory windows were obscured with black paint, which entailed working under artificial light all the time, with unhappy consequences both for health and output. One irony of the situation is that modern factory architecture had been advancing towards large window-space, which had greatly improved the conditions, but meant a bigger problem and a bigger deprivation when lighting restrictions came in; while another irony was that modern housing estates had been placed outside industrial areas, greatly to the workers' advantage until the black-out imposed what was virtually a prolongation of hours of work and strain. A well-deserved tribute is paid in the report to the philosophical way in which the workers have accepted the position and made the best of it.

The black-out adds to the strain of war work by interfering with ventilation, increasing the risk of gassing in various occupations, raising the temperature of workrooms to an uncomfortable level, and depriving the workers of ordinary daylight. But conditions have been improving in this respect, and no doubt the Chief Inspector's report for 1940 will describe not merely an adaptation of workers to bad conditions but a better adaptation of conditions to workers' normal requirements. Dr. J. C. Bridge, Senior Medical Inspector, whose section in these annual reports is always looked forward to as a valuable commentary on industrial medicine, says that before the outbreak of war the number of accidents from gas or fumes was below previous years, but during the last quarter of 1939 the number of reported cases of gassing was approximately double that of any previous quarter of the year. Where localized exhaust ventilation is effectively installed the measures taken to obscure lighting may be without detriment, but where natural ventilation is relied upon, as in blast furnaces, the tale is very different. The total number of cases of gassing reported during the year was 184, with 11 deaths. Carbon monoxide was the agent in 84 cases, chlorine in 29, and nickel carbonyl in 10. The first case of fluorine osteosclerosis in this country was brought to the notice of the Department during the year, and an investigation was still proceeding when the report was written.

Cases of industrial poisoning or disease notifiable under Section 66 of the new Factories Act showed a very considerable fall during the year. There were 109 notifications of lead poisoning, with 6 deaths. Only 15 of these cases, with 1 death, were due to the painting of buildings, an occupation which, two decades ago, was attended by more than 20 deaths a year. Cases of anthrax numbered 37, with 5 deaths; epitheliomatous ulceration, 160 cases, with 31 deaths, chiefly in the pitch industries; and chrome ulceration, 159 cases, chiefly in chromium plating, with no deaths. The number of deaths from silicosis—439—remained about the same as in previous years. Of these deaths 197 occurred among coal miners, 70 among sandstone masons, and 51 among men engaged in the manufacture of pottery. The number of voluntarily reported cases of dermatitis continues to increase: in 1939 it was nearly 3,000. The largest numbers occurred in chemical manufacture, mechanical engineering, and the manufacture and making up of textiles. The baking and biscuit trades contributed only a little over 4% of the cases.

The number of young persons, between 14 and 16 years of age, examined for certificates of fitness during 1939 was 406,575: the rejections numbered 5,681, and the conditional or provisional certificates 15,702. The chief cause of rejection was pediculosis; next come diseases of the eyes and eyelids. Defective bodily development accounted for only a little over 2% of the rejections. The term "medical supervision" is still vague and indefinite. Dr. Bridge points out that the frequent practice of engaging a medical man to be available for the treatment of accidents or to examine workers in relation to liability to compensation cannot be considered as a form of medical supervision. Many firms have gone further by engaging the part-time service of a medical man to supervise first-aid arrangements as well as to undertake examinations. A limited number have enlisted the whole-time service of a doctor whose duty it is to prevent and alleviate sickness and injury. Firms manufacturing foodstuffs and drugs are naturally more likely to realize the value of this whole-time supervision, but many other undertakings of equal size, concerned with engineering, paper-making, artificial silk, and other industries, have taken similar steps. Medical supervision for specific purposes plays an important part in factories where special work of national importance has to be done, and the Ministry of Supply has appointed whole-time medical officers in factories, some of which require more than one medical officer, and some have both men and women medical officers. As for other firms, where the occupation presents little or no risk to health the services of a trained nurse may be utilized for the care of the workers, and Dr. Bridge thinks that such care, when it is, as it should be, linked with a call on the local medical practitioner, must often suffice.

TREATMENT OF G.P.I.

The death of the distinguished emeritus professor of psychiatry in the University of Vienna, Prof. Wagner-Jauregg, brings to mind one of the major therapeutic discoveries of our time. He will always be remembered as the pioneer in the treatment by artificial malarial infection of general paralysis of the insane, "dementia paralytica." These names themselves mark the gloom of the outlook before his work fructified, while the arguments on terminology—whether it shall be called "cerebral parenchymatous syphilis" or more briefly "paresis," instead of by its traditional name—are evidence not only of changing pathological knowledge and conceptions but also of the new view of the course and prognosis that malarial therapy

has induced. Like a number of other important discoveries it was the result of the application of a casual observation made by others before him. Bumke[1] quotes Jakobi, Ludwig Mayer, Schule, and v. Halban as having observed that manic cases especially of G.P.I. were favourably influenced by intercurrent febrile infections. But often in the history of scientific discovery the initiative and energy needed to follow up an apparently small observation and to realize its significance have not been found in the original observer. Wagner-Jauregg tried a number of febrifacient means, including tuberculin, and his conclusion that malaria is at least as satisfactory as any other method has not really been superseded. Rivals of the bacterial and virus sorts have not established their position. The most recent competitor of this type has been a Rickettsia virus, which has the advantage of cultivability *in vitro*; but the method which, after malaria itself, appears to have been most used (apart from the pharmacological non-pyrexial one with tryparsamide) has been the electrical one of producing fever; this has the advantage of being subject to readier control than any of the others. Very recently what appears to be a model of team-work, comprising a group of hospitals and the public health service, has been exhibited in the U.S.A. in an investigation of the result of the electrical as opposed to the malarial method of producing pyrexia (O'Leary *et al.*[2]). In a total of 1,420 cases, of which 1,100 were treated by malaria and 320 by "artificial fever" (oddly enough the precise method is nowhere stated in the paper), the results were closely similar with patients suffering from mild and intermediate degrees of general paralysis, but very much in favour of diathermy in patients with a severe degree of the condition—i.e., those showing considerable mental deterioration.

The history of the treatment of general paralysis is one of continued advance since 1917, after a long plateau of time in which clinicians first learned to elaborate the description of a fascinating but devastating disease; then bacteriologists demonstrated the causal relation to it of syphilis. It is curious to reflect that, although Wagner-Jauregg began his therapeutic experiments in general paralysis so long ago as 1887, when he tried the effect of the inoculation of erysipelatous material, it was not apparently until thirty years later that he took up the problem again and this time solved it, as events have proved; for the whole outlook in the disease has changed, and, apart from technical improvements in treatment, further advance depends almost entirely on early diagnosis, and on social factors such as education. The success of a purely electrical method implies also a theoretical contribution, since evidently it is the pyrexial effect which is the therapeutic agent. Weichbrodt and Jahnel[3] had shown that in rabbits a temperature of 42° to 44° C. led to disappearance of the spirochaetes from the primary lesion, but this was not thought convincing, as such high temperatures were rarely if ever reached in malaria. In this connexion, however, not only is the therapeutic effect of diathermy noteworthy, but so also is the fact that the best results in the American series were obtained in cases in which the fever was highest (106° to 106.4° F.), although no better result was obtained by proceeding to still higher levels than this. It does not necessarily follow that the spirochaete cannot survive such temperatures *in vitro*; it is possible that the effect depends on hormonal alterations which make life impossible for the spirochaete in the body. That this may be the explanation is suggested by the observation that epilepsy, a purely neural process, may be improved after acute fevers. It is odd that no one seems to have followed this old scent in the case of epilepsy, as Wagner-Jauregg did so faithfully and persistently for general paralysis, transforming a prospect of ineluctable disaster into one of measured hope.

[1] *Lehrbuch der Geisteskrankheiten*, Munich, 1936.
[2] *J. Amer. med. Ass.*, 1940, **115**, 677.
[3] Bumke, O., *Handbuch der Geisteskrankheiten*, **7**, Teil 3, Berlin, 1928.

DURATION OF SECONDARY SCHOOL LIFE

One of the most important factors, if not the most important, affecting the efficiency of the entire system of secondary school education is that children should remain at school long enough to profit adequately by the facilities provided. In a recent paper Frank Sandon[1] presents data of the greatest interest on the methods of measurement of the duration of secondary school life, together with an analysis of some of the factors affecting it. He begins with a criticism of the statistical methods used by the Board of Education. These introduce anomalies into the measurements and ignore such factors as sex and the effect of transfer from school to school within the system. He proposes, instead, a system which is almost strictly analogous to the calculation and utilization of the ordinary actuarial life-tables. Thus it is possible to speak of "entrants" and "exitants" (instead of leavers), "survivors," "mortality," "expectation of life," and so forth, using these terms for the duration of secondary school life just as they are used in connexion with life-tables. Sandon applies his methods to data carefully collected from a single mixed secondary school over a period of ten years. The numbers, therefore, are not large, but even so the conclusions are of high interest.

In the case of the boys two outstanding factors affect the duration of secondary school life. One is social class; and in this connexion it is striking that a relatively slight improvement in socio-economic status results in a very considerable extension of school life. The second is the opportunity for employment. It was found that when conditions in the labour market were bad boys stayed on longer. When employment conditions improved parents tended to make sure as soon as they could of some sort of job for their sons—almost no matter what it was, as they often told the head master. Academic ability proved to be a minor influence. The brilliant certainly stay longer, and the dull have a shorter school life. Apart from these extremes, the less able stay longer at school. There seems to be a tendency to stay on in order to pass the School Certificate examination, but this is far weaker than the tendency to leave in order to secure employment. Age at entry is also a minor influence; not unexpectedly the younger entrants tend to have a longer school life. The results for girls are quite different from those for the boys. Girls have a shorter school life and tend to stay at school primarily for general educational purposes rather than as a preparation for the passing of particular examinations. The effect of economic pressure is less marked than in the case of boys. The author concludes that girls tend to stay on as long as they continue to make some headway with the work and for that period which local custom has established as conventional.

The data present an exceptional opportunity for the examination of one point. In 1936 it was decided to close the school in question at the end of the summer term of 1937, no new pupils being admitted after September, 1936; survivors in September, 1937, were to be transferred to other schools in the area. This provided an occasion for examining the effect of transfers. It was found that the effect among the boys was to increase the leavers by 50%. Among the girls the effect was even more disastrous. In view of recent recommendations, which if adopted would increase such transfers, it is clear that this point merits further and close research. The most signifi-

[1] *Ann. Eugenics*, 1940, **10**, 253.

cant thing about the paper is not, however, the actual data it presents. It is an essay in method, and points the way to a more efficient system of collecting and analysing the mass of data available to large authorities. Research on these lines should prove a sound guide to our administrators who, Sandon suggests with some acidity, "at present seem to be guided by their prejudices, their impressions, and their reading of Quintilian."

MEDULLOTROPHIC AND PANCREOTROPHIC ACTIVITY

In the early part of last year Professor Collip of Montreal reported the demonstration of medullotrophic activity in a primary alcoholic extract of the anterior pituitary gland. This extract stimulated the "dark cells" of the adrenal medulla in the hypophysectomized rat.[1] More important, it diminished the blood sugar and glycosuria in diabetic patients and produced hypoglycaemia in some normal animals. A unique property of the extract was that it was active when given by mouth. In the summary of his second paper[2] Professor Collip suggested that his extract exerted "a profound effect upon carbohydrate metabolism." Comment on these findings in this *Journal*[3] displayed interest tempered with a certain amount of scepticism, chiefly due to the fragmentary nature of the evidence provided in what it was assumed were merely preliminary notes. Further publications on the subject have not yet, however, reached this country, and the implied scepticism has obtained a more factual basis from the recent publication of two papers by Lawrence and Young[4] and by Marks and Young.[5] In the former paper the authors record their findings when alcoholic extracts of fresh ox anterior pituitary prepared according to the method of Collip[6] were given orally to four diabetic patients. No diminution of glucose excretion or of blood-sugar level was observed. The authors also found no demonstrable effect when the extracts were fed to or injected into "pituitary-diabetic" dogs. These are the dogs, first described by Young, which develop a permanent diabetes after massive injections of crude anterior pituitary extract. They are called "chiens de Young" in France, but in this country phonetic ambiguity deprives Dr. Young of the honour, already accorded to Professor Houssay, of having the preparation named after him.

Marks and Young[5] examine the claim of Collip that the alcoholic extract contains pancreotrophic activity. They performed their tests by giving the extract daily to a group of ten rats for fourteen days and subsequently estimating the insulin content of the pancreases of the treated animals. Collip's alcoholic extract did not increase the insulin content of the pancreas whether given by mouth or by injection. Other extracts of the anterior pituitary gland did, however, exhibit pancreotrophic activity and were investigated. The most important result of the experiments was in the distinguishing of the pancreotrophic activity from the activities of the anterior pituitary hormones. First, as oestrogens were known to have a pancreotrophic action, testosterone was injected, but had no effect on the insulin content of the pancreas. This fact, combined with the fact that castration had no influence on the pancreotrophic activity of the pituitary extracts, showed that the gonadotrophic factor of the pituitary was not responsible for the effect. Further proof of this distinction lies in the fact that gonadotrophically inactive preparations may have pancreotrophic activity. Similar facts differentiate the pancreotrophic effect from prolactin and from thyrotrophin. It is distinguished from the glycotrophic factor by virtue of its instability to heat. Species differences were found in the content of pituitary gland in pancreotrophic activity. These observations show that pituitary extracts do contain a distinct factor which raises the insulin content of the pancreas in the rat, but the authors are careful to emphasize that neither in their laboratory nor in that of Professor Best in Toronto, who is also working on this problem, has any evidence been brought forward to show that the factor plays any physiological part in the normal organism. It is not yet entitled to be called a hormone. Whether or not Professor Collip's extract is entitled even to be called a factor remains to be proved.

[Since the above note was written Prof. Collip has withdrawn his claims, describing their publication as a "serious error in judgment."[7]]

[1] *Canad. med. Ass. J.*, 1940, **42**, 2.
[2] Ibid., 109.
[3] *British Medical Journal*, 1940, **1**, 1024.
[4] *Lancet*, 1940, **2**, 709.
[5] Ibid., 710.
[6] *Cyclopedia of Medicine*, Philadelphia, 1939, **11**, 637.
[7] *Lancet*, 1941, **1**, 277.

NEW F.R.S.s

The names of twenty new Fellows of the Royal Society were announced last week. They include Surgeon Rear-Admiral Sheldon F. Dudley, M.D., F.R.C.P., Medical Director-General of the Navy (designate); John Carew Eccles, M.B., F.R.A.C.P., Director of the Kanematsu Memorial Institute for Pathology, Sydney, formerly Fellow and Tutor of Magdalen College and University Demonstrator in Physiology at Oxford; H. W. Florey, Ph.D., M.B., Professor of Pathology at Oxford; Joseph Needham, Sc.D., Reader in Biochemistry at Cambridge; H. G. Thornton, head of the bacteriology department, Rothamsted Experimental Station; and P. Bruce White, B.Sc., of the department of experimental pathology and bacteriology at the National Institute for Medical Research, Hampstead. Admiral Dudley is at present medical officer in charge of the R.N. Hospital, Chatham; he was formerly director of medical studies and professor of hygiene and pathology at the Royal Naval College, Greenwich, and he has published many papers and reports on bacteriological and epidemiological subjects. Professor Florey (like Dr. Eccles) is a former Rhodes scholar from Australia, and he held the chair of pathology at Sheffield for four years before his return to Oxford. Dr. Needham was Oliver-Sharpey lecturer at the Royal College of Physicians, 1935–6, and is well known for his philosophical writings on embryology and biochemistry. Mr. Bruce White has made fundamental studies of the antigenic constituents of the different species or organisms belonging to the vibrio group.

Mr. L. R. Broster has received an invitation from the American Surgical Association to be their guest and speak at their annual meeting at White Sulphur Springs, Virginia. The Medical College of Virginia has also asked him to deliver the McGuire Foundation Address on his research work on the adrenal gland. These invitations are very welcome as expressing the sympathy that exists between the medical professions of the United States and the British Commonwealth, and as affording a British surgeon the opportunity to give his colleagues in the U.S.A. a first-hand account of our problems in this country.

We regret to announce the death at the age of 90 of Sir William Smyly, M.D., for many years one of the leading obstetricians and gynaecologists in Dublin. He was a past President of the Royal College of Physicians of Ireland and of the Leinster Branch of the British Medical Association.

LOCAL TREATMENT OF BURNS

E.M.S. MEMORANDUM

The notes on the local treatment of burns printed below are based on the recommendations of the co-ordinating team on burns appointed by the War Wounds Committee of the Medical Research Council. The full text of the memorandum has been circulated from the Ministry of Health for the guidance of medical officers in Emergency Medical Service hospitals and first-aid posts. It is designated E.M.S./Gen./343.

Treatment at the First-aid Post

Minor burns which do not require admission to hospital should, after cleansing the surface with plenty of soap and water, be dressed in the following way: (1) in the case of the face or hands, with gauze or lint impregnated with sterilized vaseline; (2) in other parts of the body, with tannic acid jelly or gentian violet jelly, 1%. If jellies are used no *dressing* should be applied over the burnt area, and clothing must not be allowed to come into contact with the burn area until the coagulum has formed and is dry. The application of tannic acid or other coagulant jelly to the surface of a burn which has not been adequately cleansed is inadvisable.

Serious burns requiring admission to hospital should be treated by the application of sterile vaseline[1] on gauze or lint to cover the exposed portions of the burn. Provided the patient is shortly to be transferred to a near-by hospital, no attempt should be made to remove clothing in order to expose the entire burn area. Serious burns always require injections of morphine for pain, in full doses (1/3 to 1/2 grain for adults).

Local Treatment in Hospital

At the first hospital, where the case can be fully treated, the following lines of local treatment are advised for extensive burns of whatever degree.

Under gas-and-oxygen or pentothal anaesthesia, the burn areas should be thoroughly cleansed by the gentle but liberal use of soap and water, followed by saline and by the removal of debris under strict aseptic precautions (soft soap should not be used; the best application is some form of soap flakes). No violent scrubbing or scraping should be used, nor should antiseptic solutions or spirit be employed. If the burn area is impregnated with oil or grease, ether soap is of value for cleansing. Extensive burns should never be fully exposed at one time, owing to the risk of increasing shock by loss of body heat: a limited area only should be exposed for treatment, which should be completed before the next area is dealt with. *Loss of heat is especially marked when ether soap is used.* After the cleansing process has been completed, the burn surface and the skin around should be dried and the burn surface should be lightly dusted with sulphanilamide powder: a coagulant is then applied, except on the face, hands and wrists, and feet.

Coagulant Applications

The following solutions are the most suitable, as they act quickly and require no special apparatus, etc.:

1. Silver nitrate, 10%.
2. Tannic acid, 10%.
3. Silver nitrate, 10%, and tannic acid, 5%, used alternately.
4. "Triple dye." (One formula in common use is gentian violet, 1 in 400; brilliant green, 1 in 400; with neutral acriflavine, 1 in 1,000. The solutions are mixed in equal proportions.)

The application is best made by the use of a large gauze mop; no dressings are required over the coagulated area, but it is advisable to cover the part with a sterile towel after the coagulum is dry. The edges of the area and any cracks that may develop on the surface should be dusted daily with sulphanilamide powder. In whatever way coagulation is effected the coagulum must cover the whole area and a good margin of unaffected skin around, and must be firm and dry, or else the effect of the treatment is lost as the patient will still lose fluid from the burn area.

The areas in which no coagulant of any kind should be used are the face, the hands and wrists, and the feet. In addition to the solutions given above, tannic acid jelly and gentian violet jelly are coagulants. Circumferential tanning of a limb should be avoided if possible, and if carried out the peripheral pulse must be carefully watched for the first forty-eight hours. Coagulants tend to contract on drying, and there is a risk of dangerous constriction of vessels or distortion of tissues—for example, the fingers and eyelids—as this occurs.

Treatment of Burns in Areas which should not be Tanned

After cleansing the burn area in the manner described above, the surface is dried and dusted with sulphanilamide powder. A "tulle gras" dressing[2] is then applied, and this in turn is covered by six to eight layers of gauze wrung out in warm normal saline. The gauze must be kept moist by warm saline being dripped on it from time to time, and on no account must it be allowed to become dry. The tulle gras will enable the gauze dressings to be removed without causing pain or injury to the burn surface, provided they are kept moist; as a rule it is advisable for the first few days to change the gauze every three to four hours, the tulle gras being left undisturbed during this process. Twice a day at first, and subsequently according to the progress of the case, the tulle gras dressing is changed: where it is possible to immerse the affected part in a bath the tulle gras dressing is allowed to float off, which it does readily. In the case of the face or other parts for which a bath cannot be used, a gentle stream of saline greatly assists in the removal, which should be painless and not associated with bleeding. Where baths are used the limb can remain immersed for half an hour or more, the saline being kept warm throughout. Before applying a fresh dressing the unburned surface of the limb is dried and the burn area dusted with sulphanilamide powder.

Dressings must be carried out with full aseptic technique, and special care must be taken to ensure the surgical cleanliness of the arm and leg baths. An oil silk or jaconet bag or cover is of value in keeping the gauze moist in the case of the arms and legs, both while the patient is in bed and during transport. Where burns of the face are treated by saline packs a jaconet bib assists in keeping the patient and the bed dry.

All cases of severe burns likely to be followed by loss of function or disfigurement, or to require extensive grafting, should be transferred to a burn centre as soon as they are fit to travel.

[The memorandum concludes with detailed directions for preparing sterilized vaseline dressings, and "tulle gras," and the jaconet bib.]

[1] It is hoped that in the near future a non-greasy substitute will be available for use instead of vaseline.

[2] Tulle gras may be prepared in the following way: Curtain net with a mesh of 2 mm. is cut into pieces 9 cm. square: these are placed in a tin box of slightly larger size, and the box is filled with a mixture of soft paraffin 96 grammes and balsam of Peru 2 grammes, sufficient to impregnate and cover the material completely after sterilization by heat in an autoclave.

The annual report of the Ling Physical Education Association shows an increase of membership and continued activity. There is little unemployment in the profession; on the contrary, many new opportunities for teachers of physical training are available. The work of members in educational and recreative physical training in reception and evacuation areas, in the Services, and in social welfare shows the value of the training in the physical training colleges and the importance attached to physical education in wartime as in peace. Among the association's publications, the pamphlet "Ventilation in Blacked-out Halls" has been in great demand. A special panel is now engaged in compiling "A Modern Approach to Health Education," to be published by the University of London Press. The report states that last year a resolution was forwarded to the Board of Education by the Ling Physical Education Association Committee recommending that more attention be paid to the teaching of hygiene in schools. The resolution was supported by the British Medical Association, the Association of Headmistresses, the National Council of Women, and the Federation of Women's Institutes.

Reports of Societies

PROBLEMS OF WAR CASUALTIES

At a meeting of the Liverpool Medical Institution on March 6, with the President, Prof. O. HERBERT WILLIAMS, in the chair, Dr. WILLIAM JOHNSON and Prof. T. P. MCMURRAY opened a discussion on major medical and surgical problems of war casualties.

War Neuroses

In opening the discussion on war neuroses, Dr. Johnson remarked that in anticipation of cases occurring among civilians as a result of air raids an E.M.S. Centre was opened early on in the present war. A scheme was drawn up, and instructions were circulated by Mr. Monsarrat, Group Officer, to first-aid posts and receiving hospitals, with suggestions for dealing with patients in order to limit the number admitted to the centre. But experience in this area had shown a dearth of civilian cases, and not a single one had been admitted to the centre. This experience was very similar to that in other centres. After the evacuation of Dunkirk a group of patients was admitted comprising types similar to those admitted to a centre in France during the battle of Passchendaele. The majority of cases, however, admitted to the centre in the past eighteen months were soldiers who had not served outside this country. Some were Army misfits, others needed grading into lower categories, and some after treatment were fit to return to their units. With regard to the latter a follow-up system was being carried out. Those whom it was found necessary to board out of the Army were chiefly among the misfits and men who had suffered from neuroses in civil life.

In regard to treatment the hospital atmosphere was so far as possible excluded. Very few patients were kept in bed, and a routine programme was in operation which ensured that patients were occupied through the day. Physical training instructors, occupational therapists, and instructors from N.C.O. patients had been appointed. Carpentry, basket work, raffia work, weaving, squad drill, route marches, games, and talks on military subjects were part of the programme.

Dr. F. HOPKINS referred to the controversy in the medical press some months ago on the subject of treatment at "neurosis centres," the point at issue being whether patients should have the benefit of the highly specialized forms of treatment of modern medical psychology or whether the archaic "neurological" methods in use before the last war should still be followed. The real issue in this discussion was whether patients as a whole should be treated from the standpoint of one particular school of medical psychology—namely, the psycho-analytic—or whether they should be dealt with by more flexible and practical methods of applied psychology. While the choice and carrying out of psychological treatment was important, it formed but one of the functions of the psychiatrist, and the task of diagnosis, prognosis, and disposal was equally important, only a relatively small proportion of patients requiring or being able to benefit by anything other than the more superficial kinds of treatment. A most difficult problem was that of the disposal of the man who, though his disability might be slight, was unlikely to be a satisfactory soldier on account of personality type and attitude to service, but who might be an adequate civilian worker.

Dr. S. BARTON HALL directed his remarks to two main questions—namely, neurosis in the Army as compared with that encountered in the civilian population, and the continued admission of mentally defective persons into the Army. With regard to the former, he considered it important to determine as early as possible the man's fundamental attitude towards service as distinct from that outwardly expressed, as thereby much unnecessary effort, waste of therapeutic skill, inefficient service, friction in the military machine, not to speak of expenditure of public money, might be saved. In a series of 150 consecutive cases investigated, few of which were acute, the attitude towards service was at the outset found to be unsatisfactory in approximately half (76). Of these, only two men could be rehabilitated to a degree sufficient to enable their return to their unit. On the other hand, of twenty-four patients in whom attitude towards service was found to be satisfactory, twenty-one returned to their unit with, it was felt, in many cases an excellent prospect of rendering further useful work. Dr. Barton Hall commented on the proportion among those whose attitude was unsatisfactory of men, often over the age of 40, who had previously served in the Army and, in a number of cases, had even been invalided out and pensioned during the war of 1914–18.

Of thirty-three soldiers referred for psychiatric investigation as out-patients eleven were found to be mentally defective, though previously unascertained, and in two more intellectual development was found to be so retarded as to incapacitate them for military training or service in any grade. The anomaly in the examination of recruits thus revealed was a matter of concern for the Army, and indicated a defect in the application of provisions for ascertainment of mental defect in the Education and Mental Deficiency Acts, and also in the system of medical education whereby a Board of medical men could pass individuals so handicapped as suitable for military service.

Dr. N. S. ALCOCK said that the essential in running a war neurosis centre was the combination of physical and mental management. In dealing with the purely physical handling of cases the initial interview of every patient on admission was most important. In this, the attitude of the patient was determined: first, whether he was a man who should or should not be allowed to mix with the other men in the centre; or whether, as in hysterical patients, symptoms must be removed before the man could join in the centre. Secondly, the question of occupation was discussed, both as to what the man could do to help in the occupational programme and what type of occupation would most benefit him. Lastly, he was allocated to his medical officer. Unless there was a fairly close approximation between the life in the centre and the life in the Army, the adaptation the men made in the centre might be of little help when they returned to their Army life.

War Surgery

In opening the discussion on surgical problems Prof. T. P. MCMURRAY said that the outstanding feature of the surgery of the present war, as compared with that of the last, was the almost complete disappearance of the ward dressing trolley and the ward gas apparatus. The appalling pain caused by the daily, or twice daily, dressings had gone, and in its place was the modern technique of excision and fixation. Fixation was practically always by plaster-of-Paris, although in the wounds of the thigh in fat women complete fixation by this means was an extreme difficulty. An addition to the technique was the use of sulphanilamide by packs or in powdered form, or by insufflation on the surface of the wound; although the use of sulphanilamide had helped to prevent sepsis in some cases which had not come for operation for four to eight hours after the infliction of the wound, nothing could replace the perfect excision of the wound, which was the essential point in the treatment. Nothing was so criminal as to suggest that the excision could be done badly so long as sulphanilamide was used. The main problems met with now were shock, for which fortunately the treatment was almost standardized; the prevention of sepsis, which depended largely on the excision of infected and dead tissues and the wide opening-up of tissues which had become infected; and fractures of the pelvis, which had occurred more frequently than normal owing to the falling in of bombed houses. In many of these cases of fractured pelvis there was a rupture of the urethra, and it would be well if agreement could be reached on the ideal treatment of this complication. Were the patients with a ruptured urethra to be treated with a catheter in position, or were they to be treated by suprapubic cystotomy; and what were the advantages of each?

A warning should also be given to those who without experience used plaster-of-Paris. This was a safe method of treatment so long as it was applied smoothly and without pressure, but if skin-tight plaster was applied on a limb, then the patient should not be transferred from the hospital for at least forty-eight hours. During that time any abnormal

point of pressure could be diagnosed and the pressure relieved, but if the patient was allowed to leave and go home or to another hospital soon after the application of the plaster, tragedies might happen.

The PRESIDENT said that in considering rupture of the urethra it was necessary to differentiate between the intrapelvic and extrapelvic varieties. In the former the urine escaped into the pelvic cellular tissue behind the triangular ligament; whereas in the latter the escape was into the tissue of the perineum in front of the triangular ligament. It was the intrapelvic variety that occurred usually in cases of fractured pelvis. To establish the diagnosis of such a rupture it would be necessary to pass a catheter. This should be done with the greatest care and gentleness, for more likely than not the tip of the instrument would pass through the rupture into the pelvic cellular tissue—this would tend to spread infection. Even if the catheter did pass beyond the rupture into the bladder drainage would be inadequate; urine could still pass along the outside of the catheter and further infect the peri-urethral tissue. In view of these considerations, therefore, it would appear that immediate suprapubic cystotomy and suction drainage was the rational line of treatment to follow in these cases.

The speaker differed from Prof. McMurray when he placed bipp in the same category as the sulphonamides in the treatment of wounds. Bipp was an antiseptic—a protoplasmic poison—and therefore had no place in the treatment of fresh wounds. The sulphonamides, on the other hand, were not protoplasmic poisons. Recent work showed that these drugs could be inserted into the tissue and even into the peritoneal cavity without causing any appreciable tissue reaction: even skin grafts would grow on a surface that had been sprinkled with sulphonamides. Their role was purely bacteriostatic, and they did not interfere with the natural defensive tissue reaction.

Mr. F. RONALD EDWARDS said that in many cases plasma was still not being used in sufficient quantities, and a rapid increase in the blood volume was necessary in some severe cases of shock. This could only be obtained by forced plasma administration with multiple cannulae. Oxygen therapy by the B.L.B. mask in shock was sadly neglected, and this addition might turn the tables in a desperate case. The use of desoxy-corticosterone should be given a fuller clinical trial in shock. There appeared to be considerable difference of opinion as to how and when to give sulphonamides in cases of war injuries. There were certain wounds which could not be satisfactorily excised without producing a deformity out of all proportion to the original injury. Many wounds came into close relation to important vessels and nerves which could not be excised and which were still potentially infected. There appeared to be a definite inhibitory effect on anaerobic infection, and for these reasons sulphonamides should be inserted into the primarily excised wound. With already grossly infected wounds sulphanilamide placed in the wound would tend to be washed away by the discharge, and it was better to administer it by mouth or intramuscularly, so that the organisms deep in the wounded area would receive the drug via the blood stream. If possible, estimation of the concentration in the blood should be done, a value of 10 to 15 mg. per 100 c.cm. being maintained. The incidence of gas gangrene was low—0.5% in the area, with a mortality rate of 40%. Tetanus had not been seen.

Concerning perforating abdominal wounds, patients with involvement of solid viscera only as a whole did well, but in patients with perforation of the alimentary canal there was a mortality rate of over 90% in those submitted to operation. These patients died from shock, not peritoneal infection, and much further work was needed to investigate the action of sulphonamides in the peritoneal cavity to stay infection, so that if possible the shocked state might be more efficiently treated before these people were operated on.

Miss Anna Freud, daughter of the late Prof. Freud, has opened a clinic in Hampstead for mothers and babies who are suffering in mind and body from air raids. Treatment is free and patients are kept at the clinic until they are cured. A doctor is in attendance night and day, and there is a staff of trained nurses.

Correspondence

Crush Injuries

SIR,—The accounts of the crush injuries with renal failure (March 22) indicate that want of oxygen is an important factor, and that the inhalation of oxygen should be a method of treatment, this to be given, if possible, before release from confinement by debris, as well as after. Radiant heat given by means of a cradle and incandescent lamps should, I think, also be given. The circulation of the blood is kept up not only by the force of the heart, but by the tone not only of the muscles but of all the living cells, which, confined by skin and membranes, support the capillaries by their normal turgescence. Hence the firmness of the healthy body, which is diminished or lost in shock. Every muscular movement and change of posture furthers the circulation, and these effects are lost by fixation of the body under debris, while by pressure some parts may be rendered bloodless. Oxygen inhalation will lessen the damage caused by the deficient circulation.—I am, etc.,

St. John Clinic, S.W.1, March 23. LEONARD HILL.

SIR,—The series of cases of crush injuries with impaired renal function reported in the *Journal* of March 22 calls for comment in relation to the nursing of the severely injured.

Crush injuries are not new. They are commonly seen on the coalfield, where the treatment is careful nursing and non-interference rather than physiological and biochemical assay.

The case of fatal uraemia in a girl of 11 years reported by Mayon-White and Solandt suggests nephritis. The other cases from the Postgraduate School suggest a syndrome which might be dubbed the "continuous interference syndrome." Not only had the patients been subjected to readings of pulse, diastolic and systolic blood pressure, estimations of haemoglobin, oscillometric readings of leg volume in already injured right and left legs, radiographic examination, electrocardiographic examination, but even to catheterization—which in itself may give rise to shock. The repeated examinations for so-called blood chemistry and urine chemistry give a picture of the extent to which rest was allowed to figure in the treatment. The main objection, however, is to the volumes of fluid injected either in the form of blood, serum, plasma, or normal glucose-saline. In several cases the volume injected was equal to the blood volume of the patient. In one case 100 c.cm. of 30% saline was injected; in another 400 c.cm. of serum of quadruple strength. The patient complaining of thirst was given 200 c.cm. of 50% sucrose. Another, with an increasing chloride content, was subject to drastic reduction of chlorides by sweating, purgation, and replacement of gastric juice by sodium bicarbonate.

Haemorrhages in the newborn are frequent, either subtentorial, post-hepatic, or suprarenal. The haemorrhage under the scalp associated with caput succedaneum is almost a normal feature of childbirth. Most of these cases do well with peace, quiet, rest, and non-interference. The jaundice and occasional uric acid infarct of the kidney clear up. The uric acid infarct is rarely seen post mortem in the case of the stillborn, but is seen frequently in the case of the babe who succumbs soon after birth in the neonatal period.

Might I suggest that the system which works for haemorrhage and shock in the newborn be tried for traumatic shock? At birth the mammal has learnt to survive a series of shocks which involve the circulation, the respiratory system, the urogenital system, and the skin. We require not only charts of blood chemistry and urine analysis, but something which will be as effective to the injured as colostrum is to the newborn mammal. "Poor Tom's a-cold."—I am, etc.,

H. A. HARRIS,
Professor of Anatomy.

University of Cambridge, March 24.

SIR,—The interesting observations of Drs. Bywaters and Beall on cases of renal failure following prolonged burial under debris raise two points of interest and minor criticism.

First, as the surgeons in charge of the cases cited, we feel that the characteristic clinical picture has not been sufficiently emphasized. These cases on admission did not suggest grave

surgical emergencies. On the contrary, the primary injuries usually appeared trifling, the wheals, oedema, and interference with the local arterial circulation being the only gross signs of the ordeal to which the patients had been subjected. This absence of gross trauma, as pointed out in a previous letter to your *Journal* (September 28, 1940, p. 432), led the surgeon to feel that the cases would probably have a favourable outcome. Within a few hours, however, the whole clinical picture had changed dramatically. Signs of peripheral circulatory failure rapidly appeared, with pallor, sweating, and coldness of the extremities. Coincidently the blood pressure fell, and haemoconcentration was noted. At this stage the picture was one of traumatic shock, and when a good response followed transfusion the surgeon was again tempted to feel that the outlook was good. The response was, however, only temporary, and the sign that we soon learned to dread made its appearance—namely, a steadily progressing oliguria. Thereafter the clinical picture resembled in many respects that seen in renal failure in prostatic enlargement, and has proved, up to the present, as difficult to treat.

These three phases—a comparatively good condition on admission, a delayed peripheral circulatory failure which responds to transfusion, and finally progressive renal failure—make up a typical clinical picture which should be widely known.

Secondly, the use of the word "crush" is not in our submission desirable—suggesting as it does massive destruction of bone and muscle such as is seen in industrial accidents. In effect, in the severe crushing injuries, such as multiple compound fractures, which we have dealt with in this hospital we have not seen a case of renal failure. On the other hand, common to all the cases which developed renal failure in our series was a history of having been pinned for a prolonged period under debris. We therefore feel that the *duration* of the trauma is of great importance, and that probably ischaemia of the tissues distal to or immediately beneath the point of pressure by the debris is a contributing factor in the later developments. We would therefore suggest some such term as "pressure ischaemia" or "compression syndrome" as more suitable.—We are, etc.,

R. H. FRANKLIN.
D. M. DOUGLAS.
Surgeons, Sector VI, E.M.S.

London, March 25.

Cysticercal Epilepsy

SIR,—The case of cysticercal epilepsy reported by Dr. William Blyth in your issue of March 15 (p. 401) illustrates the importance of considering cysticercosis as a possible cause of epileptiform attacks commencing in a previously healthy adult after service or residence abroad. Unfortunately, however, there is at present no certain method of excluding this disease during life. The brain may be invaded, and the musculature remain free; and since intracerebral cysts usually do not calcify, radiographic examination of such cases is likely to be negative. Even when the muscles are invaded, the parasites may lodge too deeply for detection; or if very few in number none may happen to calcify, for all cysts do not go on to ultimate calcification.

Ideally every subject under suspicion should be examined each year, but this is a laborious and costly business, wearing to the patience of all parties. When such a procedure is possible, however, the longer the period during which re-examinations are carried out the more likely is a positive diagnosis to be forthcoming. A cyst which is flaccid and impalpable while the parasite is alive may become tense and swollen after its death, and so be easily perceptible to touch and possibly to sight. In one man whose symptoms of major epilepsy began in this country a year after leaving the Army, a cyst of this type appeared ten years after the onset of his symptoms. It was so obvious that no one could miss it. I had examined him carefully on at least twelve previous occasions over a period of years without detecting anything in the area affected. Another man who had been examined radiologically from head to foot no fewer than seven times over a period of ten years without result showed two calcifying cysts in the twelfth year of his disease. Nevertheless, whatever the duration of observation a large proportion of suspects will remain undiagnosed, although their history and symptoms are identical with those of others in the positive group, and a definite decision, one way or the other, can be obtained only by a post-mortem examination of the brain. Lately two men who had been examined for cysticercosis with negative findings came to post-mortem examination, not as the result of a follow-up—always difficult to ensure—but because death had resulted from other than natural causes. Both showed cysticerci in the brain; none was found elsewhere in the body. Again, fits may be attributed to some other cause on what seems good evidence. One man with an authenticated history of head injury while in the Army was investigated in a civil hospital by encephalography and other scientific measures. A firm diagnosis of traumatic epilepsy was made. These examinations, however, failed to disclose the presence of the fifty cysticerci which were counted post mortem in his brain four years later.

The following case history points the moral of my opening sentence. In May, 1936, when I was Commandant of the R.A.M. College, an ex-soldier clerk, employed in the library, asked to see me and told this story. The previous evening in a public-house he got into conversation with the bartender, and learned that he was an ex-soldier and had suffered from epilepsy for about six years past. The attacks had begun after he left the Army. He was undergoing a course of sedative treatment prescribed in the neurological department of a London hospital. The clerk asked if he had ever noticed any little lumps under his skin. The man replied: "Yes, I have three or four now." "Well," said the clerk, "you haven't got epilepsy at all; you've got cysticercosis." I examined the man a few days later and confirmed this spot diagnosis. I learned that besides attending the hospital mentioned he had been in the care of several doctors, and had also been in the wards of another London teaching hospital, where he was brought by ambulance, having been picked up in the street unconscious after a fit. According to the man's statement, the "little lumps" had been present during all this time. The ex-soldier clerk thought of cysticercosis; the professional practitioners did not. "*Ex ore infantium et lactantium* . . ."!—I am, etc.,

W. P. MACARTHUR.

London, March 20.

Treatment of Rectal Carcinoma

SIR,—There are a number of points raised in Dr. Ff. Roberts's article on the *x*-ray treatment of inoperable carcinoma of the rectum without colostomy (March 8, p. 357) which require discussion. While recognizing that exceptions occur in cases of high-grade malignancy and in cases of early venous spread, I agree with his statement of the slow rate of growth in rectal cancer, and the absence of distant metastases until a late stage of the disease has been reached. It is for these reasons that *a high proportion are found to be operable* when they are approached surgically (that is, explored) under the best conditions of team-work and pre- and post-operative management. For instance, out of 104 new cases of rectal cancer admitted into St. Mark's Hospital during 1940, 76, or 73.1%, were locally operable, although three of these cases were found to have small secondary deposits in the liver at the time of operation.

It would be pertinent to inquire by what standards Dr. Roberts judged his cases to be inoperable. My own experience is that one rarely meets with a case which is frankly inoperable locally in which distant metastases have not taken place. A good proportion of those which are classified on a clinical basis as of border-line operability prove on abdominal exploration to be operable, especially in male subjects. If laparotomy is denied to these cases many potentially operable cases will be missed.

If the discussion is limited to the large inoperable carcinomas of the *rectal ampulla* in which discharge is profuse and obstruction absent, then I would agree that there is a fair reason for giving *x*-ray therapy without colostomy unless some local complication such as a recto-vaginal fistula has developed. About 70% of cases occur, however, in the *upper* third of the rectum, where obstructive symptoms are likely to be prominent and important. A laparotomy is the only method of determining whether such cases are operable or not; if inoperable, I think a colostomy is the right treatment, which can be supplemented later by intraluminary radium or by *x* rays

if thought advisable. For inoperable carcinoma of the *lower* rectum involving the anal canal a colostomy is surely a desirable and necessary palliative operation for minimizing anal pain, and for relief of difficulty in defaecation or faecal incontinence.

As regards operative mortality, Dr. Roberts quotes from the paper which I wrote jointly with my colleague Mr. O. V. Lloyd-Davies in 1935 on a series of cases admitted to St. Mark's Hospital during the preceding twenty-four years. A mortality of 13.4% in 500 palliative colostomies was reported, but the post-script showed that by improved methods of anaesthesia and technique the mortality could be lowered to 5% (in forty-one operations). This figure has since then been almost maintained; during the last five years out of 201 colostomy operations for inoperable rectal cancer there have been 12 deaths (6%). Most of these deaths occurred in aged subjects, many of whom had intestinal obstruction, and were due principally to cardiac failure, uraemia, and coronary or cerebral thrombosis.

The four case reports given by Dr. Roberts are extremely interesting. To complete them one would welcome some information as to the results of abdominal examination and of digital and sigmoidoscopic examination of the rectum at the present time. Was a biopsy done originally? It would be instructive to know which grade of carcinoma has responded best to the technique employed.—I am, etc.,

London, W.1, March 25. W. B. GABRIEL.

Clinical Cancer Research

SIR,—In commenting on the annual report of the British Empire Cancer Campaign in your issue of March 1 (p. 329) you remark that in the report of the Clinical Cancer Research Committee there is no indication of the survival time of 2,915 cases living, out of 7,872 cases registered in 1938. We regret that no indication was given in the heading of this table that the figures represent the number of patients still living one year from the date of commencing treatment, or being seen at hospital in the case of those not treated. The average survival time of cases fatal within one year or less has been worked out separately for each region of the body; the present report includes that for the breast cases (45.8 months). This survival time will be worked out year by year, and it is hoped, when sufficient time has elapsed, to use it as a check on the results of treatment. Shortage of paper has not only prevented the publication of the figures for other regions, but has also necessitated the omission of a description of the method of coding and tabulation in these successive annual reports, though we recognize that it is desirable that readers in search of this information should not have to refer to previous reports.—We are, etc.,

HORDER
(Chairman)
W. L. HARNETT
(Medical Secretary)
Clinical Cancer Research Committee,
British Empire Cancer Campaign.

March 19.

Resuscitation after Wound Shock

SIR,—The resuscitation of patients suffering from the severe degree of wound shock encountered in air-raid casualties has rightly invoked much discussion. The solution of the problem is considerably hastened by the publication of individual experiences such as those of Dr. Margaret Ball and Mr. George Quist (February 22, p. 273). These writers summarize their conclusions under five headings. Most of us will agree with their observations on the misuse of tourniquets, the economy of radiography, the necessity for the thorough excision of wounds, the adoption of a closed-plaster technique, and, finally, the ever-present danger of gas gangrene. On the other hand, the conclusion that the results of treatment of severe shock in these cases by fluid replacement with blood or plasma were disappointing is open to criticism.

In the first series of cases it is noted that most of the injuries were due to the direct action of the explosive. Here perhaps is a partial explanation for the failure to resuscitate these patients. Is it not likely that at necropsy these individuals would have shown lesions in the lungs and central nervous system which might account for the progressive deterioration despite the usual measures? I am presuming that necropsies were not done, as such are not recorded in the article. The rather pessimistic findings of the writers have not been supported by others in apparently similar series of cases. I do not suggest that the writers have implied that they are going to give up the use of blood or plasma in the very grave case, but I do consider that their observations might prove discouraging to others.

In the stress of air raids and the probable disorganization in hospitals it may not be easy to have necropsies performed. There must be, however, some opportunity to perform them in the type of case where there is no response to active resuscitation but where the local apparent injury does not seem too severe to obviate recovery. A plea is therefore advanced for early reports of complete post-mortem findings in the latter group of cases. Until these are available it will continue to be difficult to assess clinically the general visceral trauma present and so give "an accurate prognosis as regards immediate mortality."

I would be interested to know if lung changes, demonstrable radiologically, can be observed in the first hour or so after injury. If so, would these chest lesions provide a prognostic guide as to the central nervous system and other general lesions of blast? Limitations of the supply of blood, serum, or plasma demand that some real attempt should be made to define the "hopeless case"—if such exists!—I am, etc.,

JOHN A. SHEPHERD,
Surg. Lieut.-Commander, R.N.V.R.

March 6.

Cut Tendons

SIR,—In connexion with Mr. H. Blacow Yates's letter (March 15, p. 417) I would suggest that before the finger which had its flexor tendons cut is, as a routine measure, thrown to the dogs, a thorough attempt should be made to restore function of the sutured tendons by the use of "amnioplastin," which, so far as I am aware, has not been given a fair trial in this kind of surgery.—I am, etc.,

Huddersfield, March 21. P. KOHNSTAMM.

Control of Catarrhal Infections

SIR,—The article by Surgeon Lieutenant R. Ernest King, R.N.V.R. (February 1, p. 154) prompts me to record a similar experiment which has been carried out during the present winter on board one of H.M. ships.

In November, 1940, coinciding with the return of a number of the ship's company from leave, several ratings reported with symptoms of the "common cold"—that is, slight sore throat, headache, and coryza, with little or no constitutional disturbance. As the first cases to report were confined to ratings from two mess-decks it was decided to attempt to limit the spread of infection among the rest of the ship's company by means of routine throat sprays and gargles. The ratings placed under observation were selected according to their disposition into different messes, so that each treated group was adjacent to an untreated group and shared the same living and working spaces, eight messes being chosen for this purpose. The numbers of the ratings in separate groups were unequal owing to the variation in size of the different messes.

The two messes already infected, together with two so far uninfected messes, were used as controls and received no treatment. Four other uninfected messes were selected for treatment, and the ratings were instructed to report to the sick bay every morning and evening on going off watch. Two of the latter groups were given gargles of pot. chlor. and ac. carbolic., one group received a throat spray of 10% potassium chlorate solution, while the fourth group was given a throat spray of 1 in 10,000 potassium permanganate solution. The members of all eight groups were instructed to report as soon as any symptoms of a sore throat or "common cold" made their appearance. This routine has been carried out for eleven weeks, and the following results have so far been obtained:

	Treated	Untreated
Total number under observation	36	58
Cases on sick list	0	2 (3.4%)
Cases on attending list	4 (11%)	12 (20%)

The sick list cases consisted of one "common cold" with frontal sinusitis, and one case of streptococcal tonsillitis. All

cases treated on the attending list were of the "common cold" type, beginning with dryness or soreness of the throat, followed by coryza and slight cough, with little or no rise of temperature. The four cases which occurred in the treated group had been treated with gargles only. No cases have so far occurred among those who have received the throat sprays.

This small series of cases indicates that a simple routine throat spray may be of value as a prophylactic measure against the normal winter incidence of upper respiratory infections, since it has been carried out during a period in which there has been no evidence of any widespread epidemic of these infections. Surgeon Lieutenant King's experiment has shown the undoubted value of such treatment in limiting the incidence of infection during the type of epidemic experienced in 1939–40.

This type of epidemic occurring in a closed community of relatively constant population, such as the complement of a warship, should be readily limited by routine prophylactic treatment combined with the prompt treatment of all cases showing even the mildest symptoms. A special look-out must be kept for such cases among newly joined personnel and in personnel returning from leave, in order to minimize the possibility of fresh infection. It has been noted during the past nine months that sporadic cases of throat infection have invariably occurred in ratings just returned from leave. Since leave is necessarily very limited under present conditions, the problem of fresh infection is somewhat minimized in a sea-going ship. This must, however, be a major problem in training establishments where there is a large moving population with a constant stream of new entries from different parts of the country, all of whom may be accompanied by their own varieties of viruses and cocci. The effects of this were seen during the "acute sore throat" epidemic of 1939–40, when a sharp rise in the number of cases admitted to hospital from shore establishments invariably coincided with week-end or other changes in the population.

The prevention and control of epidemics in the fighting Services appear simple in comparison with the problem as it affects the civilian population, so many of whom are now spending part of their lives in crowded air-raid shelters. The problems and peculiarities of the "shelter herd" have recently been summarized by Dr. W. H. Bradley.[1] In this article it is pointed out that many large shelters have developed a fairly constant population, the occupants of any one shelter tending to come from the same social, racial, or economic groups, with very little contact between the occupants of neighbouring shelters. In other words, each shelter has become a separate closed community, but differs from the other types of closed communities (for example, a large boarding school) in the fact that the population is dispersed during the daytime, often to widely separated districts, and congregates each night in the common incubator.

It is to the credit of the authorities that the winter has advanced so far without the occurrence of serious or widespread shelter epidemic. It is to be hoped that this satisfactory state of affairs does not lead to a feeling of complacency and cause us to forget the warning uttered by Prof. Greenwood (*British Medical Journal*, 1940, **2**, 677) or to neglect the more simple prophylactic measures. Since our present knowledge is still insufficient to make the universal use of the latest influenza vaccine a practicable measure, we must continue to try the simple methods which are readily available to everyone. If these simple methods succeed in limiting the common infections such as the sore throat and "common cold," then they might well be the first step towards the prevention of a disastrous epidemic similar to that of 1918.—I am, etc.,

J. W. RAE, M.B., Ch.B.,
Feb. 11. Surgeon Lieutenant, R.N.V.R.

Intramuscular Quinine for Malaria

SIR,—I was interested to read the letter from Dr. R. N. Hall (March 8, p. 380) advocating the intramuscular injection of quinine for malaria, for my experience in a mission hospital in Bihar, India, has convinced me that it is an economical and, with ordinary precautions, a safe method of treatment. After drawing up the solution into the syringe we used to wipe the needle carefully with the spirit swab which afterwards was used for purifying the skin. The site we used for injection was the outer aspect of the thigh in the upper part of the middle third. One could distinctly feel the needle pierce the fascia lata, and know that one was really giving the injection intramuscularly.

There is one point I have not seen stressed in the treatment of malaria, and that is the importance of timing the administration of quinine—whether it is given by injection or by mouth. I believe this to be most important, and from experience I found that the most effective time to give quinine by injection was one hour to half an hour before the temperature started to rise. By intramuscular injection the quinine attains its maximum concentration in the blood rapidly, and one's aim should be to get this maximum concentration at the time when the merozoites are scattered into the blood stream. This is shown clinically by the sudden rise of temperature. It is little use to give a 5-grain injection of quinine in the morning if the patient's temperature is not due to rise till the evening, for by that time the concentration in the blood is too weak to be lethal to the merozoites. It is also bad practice to give the injection when the patient's temperature has already risen, as not only does this add to the patient's discomfort, which from the fever is already considerable, but it also has little effect, as by the time the concentration in the blood has risen sufficiently the merozoites are safely sheltered in their new red-cell homes. We found that a single timed injection was usually sufficient to knock out an attack. Even when given by mouth we found the administration of quinine was more effective if given with reference to the temperature chart, but in this case one to one and a half hours was found to be the best time to allow before the expected rise.

The case which finally convinced me of the importance of timing the administration of quinine is, I think, worth reporting. The patient, a doctor, had had a severe attack of blackwater fever. During convalescence she had a slight rise of temperature (99.6° to 100° F.) twice in a day, at about 10 a.m. and 6 p.m., on alternate days. I was at first puzzled by this double rise, but then realized that it might be due to a double infection, one cycle causing the morning and the other the evening rise. On account of the blackwater it was important to give the minimum of quinine, so I gave none by mouth, but had the temperature charted every half-hour and gave a small timed injection of quinine before the morning pyrexia. This prevented the morning rise, but that evening the temperature rose as before. Two days later a second injection given half an hour before the temperature was due to start to rise in the evening knocked that out also, and the rest of the convalescence was apyrexial.

Dr. Hall states that "three daily intramuscular injections of quinine grains 5 are found to cure the acute symptoms." I hope he will try one timed injection and see whether it is not equally effective.

Should the experience of others be the same as my own, a large amount of quinine can be saved, and our patients will be spared some of the very real unpleasant effects which are the result of the "heroic" doses of quinine still sometimes administered.—I am, etc.,

Yeovil, Somerset, March 12. KINGSLEY E. D. DAUNCEY.

Cyclical Mucosal Ulceration

SIR,—The report by Dr. Pappworth of eight cases of cyclical mucosal ulceration in your issue of February 22 (p. 271) contains many points of great interest. I do not wish to go into detail as to a possible difference between ulcus vulvae acutum and those of the author's cases in which a hereditary factor is apparent, but I would point out that if the disorder is clearly associated with menstruation it might be classified among the menstrual molimina. In many cases these are refractory to endocrine treatment, but when looked at as allergic manifestations there seem to be better prospects of a cure. Thus, Géber (*Brit. J. Derm. Syph.*, 1939, **51**, 265) reports that he achieves remarkable successes in these intractable disorders with injections of serum taken during the menses and applied intradermally daily or every second day. Although Pappworth mentions no allergic symptoms in his cases except angioneurotic oedema once, the very heredity of the symptoms suggests the possibility of allergy as an underlying cause.—I am, etc.,

London, N.W.2, March 8. B. BANETH, M.D.

[1] *Practitioner*, January, 1941, p. 38.

Agranulocytosis after Sulphapyridine

SIR,—May I be permitted to suggest that Dr. Dywien's contribution to the toxicology of sulphapyridine (March 22, p. 456) would be far more valuable if he were to record the total dosage of the drug employed. He records his case as one of fatal agranulocytosis following only a short course of treatment with sulphapyridine, but he mentions the fact that the man had had a fortnight's course terminating only a week before and subsequently received further dosages. It is surely now generally agreed that the time factor is of less importance than the total dosage employed, and it would seem as though the inhibitory effect of the drug on the leucopoietic process wears off very slowly.

It would be a pity if such a valuable drug were to fall into disrepute through being represented as more toxic than, in fact, it is. The case quoted serves to emphasize not the danger of a short course of sulphapyridine but the danger of overdosage and of administering a second course within a short time after the initial treatment.—I am, etc.,

St. Mary Cray, Kent, March 21. BRIAN H. KIRMAN.

Vitamin C and Skin Disorders

SIR,—The interesting letter from Dr. L. J. Picton (March 15, p. 420) concerning the value of raw greens prompts me to mention a recent experience concerning the excellent results of turnip juice in the treatment of bottle-fed infants suffering from acute papulo-erythematous eruptions.

The cases under review numbered three and their ages varied from 5 to 12 weeks, while the home conditions were of a low social standard. The mothers of those infants were unable to continue breast feeding once the bed was vacated and the household duties were resumed. Diluted cow's milk and white sugar was adopted as the most convenient substitute. The condition of the skin suggested a preliminary stage in the development of so-called "infantile eczema." The disappearance of rash and general improvement of the baby were noticed within one week of giving turnip juice on the lines suggested by Dr. Picton. The absence of fruit juices, and, indeed, the difficulty of procuring either honey or brown sugar as recommended, leave no option in regard to the use of ordinary white sugar. This is, of course, an objection, though I trust not a serious one.

In older children—from 2 years onwards—raw turnip is invaluable and is always relished by youthful palates which have not yet been perverted by excessive devitalized sugary food. Dr. Picton's interest and good work concerning the relationship between agriculture and health are worthy of the highest admiration and support.—I am, etc.,

Kilmacthomas, Co. Waterford, March 19. P. G. DOOLEY.

Vitamin B_1 in Diphtheria

SIR,—Drs. G. E. Donovan and M. Bannister (March 8, p. 359) present evidence against the value of vitamin B_1 in the complications of diphtheria. I would like to offer criticism of their paper, lest it be too rapidly assumed by those who have only time to read the summaries of papers that substantial proof is offered that the vitamin is valueless in diphtheritic heart failure. None of their "control" cases appear to have had heart failure at all. Of the test cases—that is, receiving the vitamin—three are recorded as having shown signs of failure. One of these (No. 12) received no vitamin for ten days after the appearance of symptoms of heart failure; another (No. 9) was treated from the day symptoms of heart failure appeared, but not for five days after the appearance of palatal palsy; both these recovered. The third (No. 7) is the only one recorded as having had gallop rhythm: it is not stated when symptoms of heart failure first appeared, or how long after treatment with the vitamin was begun death occurred. Treatment was not begun until the twenty-sixth day, but palatal palsy appeared on the fifteenth day.

I submit that these results are wholly inadequate as evidence on the subject, and that the usefulness of the vitamin in diphtheria and other toxic states should still be regarded as *sub judice*. I am interested in the subject as having recently seen two cases in young children not only with gallop rhythm but also with right ventricular failure (oedema, large and tender liver, scanty output of urine), both of whom made rather dramatic recoveries after subcutaneous injection of B_1. Other treatment was, of course, being administered: in one case gallop rhythm disappeared in the course of twenty-four hours and diuresis began almost immediately.—I am, etc.,

Edinburgh, March 21. DUNCAN LEYS, M.D.Oxon.

Vitamin K in Obstructive Jaundice

SIR,—Mr. M. J. Smyth (March 15, p. 417), in reply to my letter (February 22, p. 292) on vitamin K in obstructive jaundice, agrees with most of my statements. While supporting transfusion in cases resistant to vitamin K, he says that the increase in the prothrombin rarely exceeds 10 to 15%. This affirmation loses its value by neglecting to state the volume of blood employed.

He states further that blood is better than plasma and appears to assume that plasma must of necessity be stored. Actually, if fresh plasma is used, twice the amount of prothrombin is introduced for an equivalent volume of blood. Theoretically, the prothrombin of plasma (which has been isolated successfully) should be employed, but as it is unstable it is unlikely to be marketed.—I am, etc.,

Middlesbrough, March 17. R. N. HERSON.

Calcium Requirement

SIR,—I read with much interest Dr. J. P. McGowan's letter on calcium requirement (March 15, p. 421). I am definitely of the opinion that supplementing the dietary calcium with oral administration of calcium salts is not merely useless but can be positively harmful. Dr. McGowan states that certain calcium salts provoke osteoporosis. I entirely agree. It is only reasonable to suppose that the addition of calcium salts to the natural organic calcium of the normal diet precipitates the latter into relatively insoluble compounds which are eliminated by the bowel as sulphates, carbonates, etc.

The Craven district of Yorkshire is tolerably prosperous. It is essentially rural. Dairy produce, as well as mutton, pork, etc., are plentiful in normal times. It is a limestone country and the vegetation is rich in lime salts. The stocks benefit accordingly. Yet rickets is prevalent and dental caries rampant. I believe the secret is not the diet but the unusual hardness of the water. The incidence of lithiasis, renal as well as biliary, is remarkable. I have noticed similar tendencies in other districts where the water is unduly hard.

In the Island of Lewis rickets is unknown and the incidence of dental caries remarkably low. The diet is certainly wholesome with an adequate calcium ratio, but the water is very soft—so soft that a minimum of soap is required for washing purposes. But the normal diet of the Cravendale people can be scarcely less wholesome or less rich in calcium.

Water which is unduly hard by reason of lime in suspension or solution can actually be softened by the addition of more lime to form and precipitate lime salts. Unless I am mistaken, the wise people of Aberdeen had recourse to this dodge to soften the Dee water used in the Granite City. By the same analogy it is not unreasonable to think that natural calcium plus phosphate present in food and available and assimilable as such can be rendered insoluble and unavailable by the drinking of hard water.—I am, etc.,

Biggar, Lanarkshire, March 18. J. MACLEOD, M.D.

Malignant Measles?

SIR,—I have been much interested in the comments aroused by the note I made on the case diagnosed by me as "malignant" measles (March 8, p. 380).

Unfortunately the child was seen only once after the development of the rash and that at 2.0 a.m. in the poor light of a cottage. The child was already moribund and was disturbed as little as possible for purposes of examination. The parents did not wish a post-mortem examination to be made, and as I was not in doubt concerning the diagnosis of measles I did not insist, although for the purposes of discussion and finality it would obviously have been desirable.

Comment has been mainly focused on whether this case ought not to have been diagnosed as the Waterhouse-Friedrichsen syndrome or suprarenal haemorrhage. Clinically

the child presented the features characteristic of this condition—sudden onset, rapid fatal course with cyanosis, circulatory failure, and subcutaneous haemorrhages—and the point at issue is whether this syndrome was due to measles or to some other cause. Kunstadter (*Arch. Pediat.*, 1939, **56**, 489) estimates that 65 to 70% of cases in which bacteriological investigations have been made have been shown to be due to the meningococcus, but he points out that other infections have been mentioned as causative agents—among them measles.

In this district only one case of cerebrospinal meningitis has occurred during the last twelve months, and that was several months prior to the case under discussion. This latter was seen, however, during the height of an exceptionally widespread measles epidemic.

Whilst a morbilliform eruption can occur in suprarenal haemorrhage *not* due to measles (Grace, Harrison, and Davie, *Lancet*, July 27, 1940, p. 102) there is no reason to assume that measles is absent in the presence of a typical eruption even when this *is* accompanied by signs of suprarenal haemorrhage, unless some other organism is found to be responsible. Some of the recorded cases in which cultures have been made from blood and cerebrospinal fluid have yielded negative cultures (Sachs, *Ann. intern. Med.*, 1937, **10**, 1105).

With regard to Dr. G. P. Goodwin's comment (March 22, p. 462) that no mention was made of Koplik's spots or of the usual prodromata of measles, it is to be noted that the former disappear as the rash develops and are therefore not of value in a case like this unless they happen to have been looked for before any other suspicion of measles arose.

I agree with Dr. Price Williams (p. 462) that "blackness" does not necessarily imply malignancy, although in this case both terms were justified. In the present epidemic a typical case of morbilli bullosi was seen by a colleague. The course of the illness was prolonged for several days but ultimately reached a fatal conclusion. Another typical case of measles suddenly developed convulsions and went into a state of coma from which it did not recover. This may seem to be a high proportion of fatal cases for one district, but over three hundred cases have been notified this year, and this number could doubtless be increased by cases not seen by any doctor.—I am, etc.,

Tiverton, Devon, March 23. AUDREY Z. BAKER.

Hospitals Radon Centre

SIR,—As the result of a generous gift from the British War Relief Society of New York, further supplies of radon are now assured. The gift was made to the British Hospitals Association, who have asked the Middlesex Hospital to administer it. This new supply is intended for the use of hospitals throughout the country, and no distinction will be made between requisitions for paying and non-paying patients. It is hoped to increase the amount of radium in solution at this new centre when the demand warrants it.

In the first instance it will be necessary to charge all hospitals for supplies of radon, and it has been decided to charge for it at the lowest basic rates obtaining at the Medical Research Council Radon Centre—namely, one shilling a millicurie, with a reduction to sixpence a millicurie for any quantity in excess of fifty millicuries; the minimum charge for any radon requisition will be one guinea. It is hoped that in the near future some arrangement will be possible whereby the burden of such payments may be lightened. Applications for radon may now be sent to the Hospitals Radon Centre, c/o Barton Lime Co., Barton-in-the-Clay, Bedfordshire; telephone Hexton 210.—I am, etc.,

Middlesex Hospital, W.1, March 24. SIDNEY RUSS.

E. Wolff (*Arch. Pediat.*, 1941, **58**, 1), who records eight illustrative cases under the name of "buccal spots," describes a new sign in influenza and the common cold consisting in the appearance in 70% of the patients within the first three days of small white specks in the mid-area of the mucous membrane of the cheek, opposite the bite-line of the teeth. The author says that they are most frequently situated (1) between the anterior and middle thirds, (2) in the centre, and (3) between the middle and posterior thirds of the line. They are distinct from traumatic lesions, Koplik's spots, and aphthous stomatitis.

Obituary

Dr. ARTHUR DOUGLAS WEBSTER, O.B.E., died at his home in Mansionhouse Road, Edinburgh, on March 16, aged 85. A native of Nova Scotia, he graduated M.D., C.M. of McGill University in 1878, and, coming to Edinburgh soon afterwards, obtained the licence of the two Scottish colleges. He was admitted F.R.C.P.Ed. in 1884, took the B.Sc. of Edinburgh University in Public Health in 1888, and proceeded to the D.Sc. in 1900. Dr. Webster was a keen Volunteer in the years before the last war, serving in the ranks before he was gazetted to a commission as medical officer of the 4th Battalion Royal Scots (Queen's Edinburgh). On the outbreak of war in August, 1914, he offered his services and was appointed medical officer of the 1st Edinburgh Battalion (Kitchener's Army) 15th Royal Scots and attained the rank of Lieut.-Colonel R.A.M.C.(T.); for his military services he was awarded the Volunteer Decoration and the O.B.E. Dr. Webster, who had been a member of the British Medical Association for sixty-one years, was a Fellow of the Royal Physical Society of Edinburgh and the Obstetrical Society of Edinburgh, and an external member of the Royal Medical Society. He had long held the post of examiner of blind persons for the South-East District of Scotland. His eldest son is Dr. J. H. Douglas Webster, honorary director of the Meyerstein Institute of Radiotherapy, Middlesex Hospital.

Dr. WILFRED SCOVIL SODEN, who died suddenly on March 13 at Winchcombe, Gloucestershire, aged 52, received his medical education at Cambridge (St. John's College) and St. Bartholomew's Hospital. He graduated B.A. with honours in the Natural Sciences Tripos of 1910 and took the English Conjoint qualifications in 1913 and the M.B., B.Ch. degrees in 1920. From 1913 to 1915 he worked at the Metropolitan Hospital, first as house-physician and later as house-surgeon, and then as pathologist and registrar. He served in the last war with the rank of Captain, R.A.M.C.T., and was mentioned in dispatches, and after the armistice remained in Egypt and served for a time as examiner at the Cairo School of Medicine. It was during this period that he wrote his M.B. thesis on the work of a stationary hospital in Palestine. At Winchcombe, where he began practice in 1921, Dr. Soden was appointed medical officer and public vaccinator for the Vale District, and he became honorary surgeon to the Winchcombe Hospital, which he was largely instrumental in establishing in 1927. He had been a member of the British Medical Association for the past eighteen years. By his death Winchcombe and the surrounding countryside has suffered a great loss.

We regret to record the death by enemy action of Dr. HILDA BEATRICE GRINYER. She studied at the London School of Medicine for Women, taking the diplomas of M.R.C.S. and L.R.C.P. in December, 1938, and in February, 1940, was appointed house-surgeon at the Manchester Royal Eye Hospital, where she worked most assiduously until her untimely death during an air raid on Manchester. It was her custom during the "alert" periods to help in the carrying of children down to the shelter and to assist the patients in every way.

The sudden death occurred on March 21 of WILLIAM ADAMS CLARK at the age of 77. He graduated M.B.Lond. after his curriculum at St. Bartholomew's Hospital, and proceeded to the M.D. three years later. After holding several minor appointments he settled in 1895 in practice in Penge, where he died. Here he had a large area from which he drew patients, and he was greatly respected owing to his thoroughness in diagnosis and skill in treatment, and for his kindness to rich and poor alike. He was school medical officer for the Penge educational authority. Dr. Adams Clark was a staunch evangelical churchman, and much interested in the activities of the congregation of which he was a member. For many years he had been a member of the B.M.A. All three of his children—a son and two daughters—are following their father's profession. Some years ago he had a motor accident from which he did not appear ever to have fully recovered, but he died suddenly from myocardial degeneration.

Universities and Colleges

UNIVERSITY OF OXFORD

Election to Board of Faculty of Medicine

An election of two members of the Board of the Faculty of Medicine will be held on June 4. The members elected will come into office on the first day of Michaelmas Term, 1941, and will hold office, the senior for two years and the junior for one year from that day.

The General Medical Electorate consists of all Oxford graduates in medicine who are members of Convocation. The Board of the Faculty of Medicine includes two members elected by the general medical electorate who must be members of that body and of whom one at least must be a person engaged in teaching one or more of the clinical subjects of the Faculty.

Nominations of duly qualified candidates for election will be received by the Secretary of Faculties at the University Registry up to 10 a.m. on May 14. Each nomination must be signed by six members of the general medical electorate, and no candidate will be eligible whose nomination has not been received by that date.

UNIVERSITY OF LONDON

The degree of Ph.D. for internal students has been awarded to Mary T. Franklin of the London School of Hygiene and Tropical Medicine.

UNIVERSITY OF BRISTOL

J. M. Yoffey, M.D., F.R.C.S., has been appointed to the Chair of Anatomy in the University in succession to Prof. S. E. Whitnall, who retires at the end of the current session.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The following candidates have satisfied the examiners for the diploma of the College:

Marie H. Calverley, L. E. Cowan, Ursula M. Dick, Marjorie O. Dunster, D. S. Foster, R. R. Gordon, C. N. Gosse, Ruth M. Howitt, Iola Ll. T. Jones, Agnes MacF. D. Milne, J. Overton, Mary A. Rogerson, C. R. Sluming, Christine M. Stacey, Evelyn E. Steed, Lucy M. Sutcliffe.

The Services

HONORARY SURGEON TO THE KING

Air Commodore Frank Cuninghame Cowtan, R.A.F., has been appointed Honorary Surgeon to the King in succession to Air Marshal Sir Victor Richardson, K.B.E., C.B., R.A.F.

D.D.M.S. APPOINTMENT

Colonel (Temporary Brigadier) O. W. McSheehy, D.S.O., O.B.E., late R.A.M.C., has been appointed a Deputy Director of Medical Services and has been granted the acting rank of Major-General.

R.A.F. AWARDS AND MENTIONS IN DISPATCHES

The George Medal has been awarded to Flying Officer Kenneth Leopold George Nobbs.

One night in November, 1940, an aircraft caught fire in the air and crashed in the vicinity of an aerodrome. Flying Officer Nobbs hastened to the scene of the accident and, although the aircraft was burning fiercely and machine-gun bullets were flying in all directions, he at once entered the wreckage. He succeeded in pulling out the trapped air gunner, and after carrying him to a safe distance extinguished his burning clothing just before the petrol tanks exploded. Although the air gunner subsequently died of his injuries, Flying Officer Nobbs displayed the utmost courage and an entire disregard of danger in his efforts to save the air gunner's life.

Flight Lieut. David Anderson Smith, A.A.F., has been appointed an M.B.E. (Military Division) in recognition of distinguished services rendered in operational commands of the Royal Air Force.

Flight Lieuts. William Noel Whiteside and James Leonard Brown, R.A.F., and Flight Lieut. Edward Conrad Gross, A.A.F., have been mentioned in dispatches.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Captain THOMAS ELLIS MITCHELL died at Birmingham this month, aged 34. He was the only son of the late Dr. and Mrs. T. E. Mitchell of Old Hill, Staffs, and was educated at the University of Cambridge and Guy's Hospital, qualifying L.M.S.S.A. in 1933. Before the war he was in partnership with Dr. Hugh Stevenson at Old Hill.

Medical Notes in Parliament

Nursing Demands and Mobilization of Women

The mobilization and registration of women for war service were discussed in the House of Commons on March 20. Opening the debate for the Ministry of Labour, Mr. R. ASSHETON said that Mr. Bevin had appointed to help him in his work a committee of women, including Dr. Summerskill. Before this year was out there would be a demand for women to take the places of men in every occupation where it was possible for them to do so. There were also demands in the public health and nursing services. On April 19 all women born in 1920 would be registered and would soon be followed by the next older age group. All women, married or single, would have to register unless already in the women's services or in the nursing services attached to the armed Forces. The greatest care would be taken to avoid calling on women with young children. No woman who was pregnant would be called up compulsorily. It would be wise to obtain the services of unoccupied women in the older age groups before taking away women of 20 or 21 who were doing useful work. Registration would be followed by interviews, at which an important consideration would be the woman's health. It was not proposed that women should be examined by a medical board, but it would be possible for women to produce medical evidence of any infirmity or disability. The Ministry of Labour would be entitled to obtain an independent medical opinion.

Miss WARD asked Mr. Assheton to see whether justice was being done to nurses. A Division of Nursing in the Ministry of Health had been asked for, with people in charge who were qualified and experienced in the nursing world. Local authorities had been able to make arrangements about superannuation for nurses, but no voluntary hospital had been able to accept the responsibility of keeping up the payments. The War Office had not come to a decision with the Treasury to treat properly the nurses in the armed Forces of the Crown in regard to superannuation.

Viscountess DAVIDSON said that in a civilian hospital which would soon have some 1,500 beds, a large percentage of the domestic servants on the staff aged 20 or 21 left, within twenty-four hours of Mr. Bevin's speech on the conscription of women, to enlist in one of the three Forces, being convinced that compulsion would follow. She asked for an instruction that such women should not leave their present jobs until they were needed.

Miss HORSBRUGH said the work done in the hospitals took second place to none in the country, whether it was domestic work or the work of nurses, doctors, or ambulance personnel. She thought the call to that service would be answered. The Civil Nursing Reserve had trained many thousands of women, but there had been difficulty with women who did not wish to leave their homes. Greater mobility was necessary because the fever hospitals and some of the special hospitals were not getting sufficient recruits. However, there had been a steady increase in the numbers coming in, but new recruits were wanted who would go anywhere and nurse everyone and would stay in one place until it was found that their services were more urgently needed elsewhere. Arrangements had now been made for a Nursing Division of the Ministry of Health. Difficulties associated with the superannuation could be overcome, but it was very difficult to do so in wartime. Women over 30 as nursing auxiliaries could obtain a short instruction in hospitals, and arrangements were being made for nursing training from now on of a more comprehensive character.

The Ministry hoped to form a Central Register for those who came into the nursing profession merely for the war or who hoped to work in that profession later. The Ministry would fix a minimum rate of salary during the war, and hospitals to which the probationers were sent from the Central Register would be required to pay this. She did not believe, now there were calls to women to work in munition factories, that the call for nurses would not be answered.

Dr. EDITH SUMMERSKILL said it was taken for granted that there would be no calling up of expectant mothers, but there would be expectant mothers in the factories. An employer committed an offence if he knowingly engaged a woman during the four weeks after childbirth, but could employ her right up to childbirth. The Midwives Institute and other organizations pressed for the Minister to issue an order making it an offence for a woman to be employed during the four weeks before confinement. The Minister should introduce a Regulation right away dealing with this matter. She asked the Minister also to consider allowing a nursing mother to have time to feed her baby at work.

Milk Supplies

In the House of Lords on March 18 Lord WOOLTON said the Government had decided that in these abnormal times it could not adopt the recommendations made by Lord Perry's Committee on the distribution of milk. By maintaining an unrestricted supply of milk to nursing and expectant mothers, to young children, and to children under the milk-in-schools scheme the Government would give priority to some 5,500,000 people. He was also arranging to secure the maintenance of milk supplies to hospitals and, under prescribed conditions, to certain types of people who were ill. The Ministry of Food, with the Health and Education Departments, had removed many of the difficulties which arose in the milk-in-schools scheme as a result of war and evacuation. He had decided to restrict the consumption of milk by the ordinary man and woman, and had asked dairymen to reduce from the middle of April their domestic sales by approximately one-seventh. He would require bakers and flour confectioners to dispense with milk and would continue the ban on the use of fresh cream, and that on the use of milk in making synthetic cream and ice-cream.

State Medical Service

Mr. GROVES asked whether the Minister of Health, in view of the fact that medical services directly or indirectly controlled by the Government embraced the armed Forces, the emergency medical and air-raid precautions services, medical benefit under the National Health Insurance Acts, public assistance, services in respect of factory workers, and medical officers of health, would consider instituting a State Medical Service to solve the problem of the distribution of medical man-power between the claims of the civilian population and the armed Forces. Mr. BROWN replied on March 25 that the present time was not opportune for considering this suggestion. Machinery for securing that the best use was made of the medical man-power available had been in existence since the beginning of the war.

Nursing Homes in Central London.—On March 19 Mr. LIDDALL asked whether the Minister of Health would, as part of reconstruction planning, arrange with the London County Council gradually to abolish the derelict houses in slum areas around the Baker Street district of Marylebone, which had been converted for use as private nursing homes, and to replan the whole private nursing home system and location in Central London. Miss HORSBRUGH answered that the needs of adequate medical services would be borne in mind in the plans for reconstruction of large areas, but it was too early to make any statement on the position of particular areas or particular services after the war.

Batteries for Hearing Aids.—Captain WATERHOUSE stated on March 20 that difficulty in securing batteries for use with electrical hearing apparatus was due to increasingly heavy Service demands for miniature cells. The problem of arranging for the use of other types of cell in hearing aids was being examined in consultation with the manufacturers. Meanwhile, supplies of miniature cells were being released.

Notes in Brief

The arrangements for the medical care of the Home Guard are under review. Mr. Groves, in asking about this, said that in many cases the Home Guard was setting up its own medical service.

No. 9

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 1, 1941.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	400	22	97	1	17	623	33	115	2	2
Deaths		3	7				9	12		
Diphtheria	1,014	50	334	25	34	767	42	256	61	30
Deaths	41	1	13	1	1	29	—	9	6	2
Dysentery	179	17	25	3	—	45	10	26	—	—
Deaths			—		—			—	—	—
Encephalitis lethargica, acute	4	2	2		—	7	1	—		—
Deaths		—					—	—		
Enteric (typhoid and paratyphoid) fever	18	—	1	6	—	11	3	2	7	2
Deaths	1	—	—	—	—	—	—	—	—	—
Erysipelas		2	52	4	—		—	55	7	5
Deaths								2		
Infective enteritis or diarrhoea under 2 years	40	2	12	2	1	33	3	7	7	3
Deaths										
Measles	15,334	325	159		23	4,535	65	112		241
Deaths	19	2	—	1	—	4	—	2	—	13
Ophthalmia neonatorum	87	7	12		—	87	7	37		—
Deaths										
Pneumonia, influenzal*	1,647	65	43	17	8	2,243	111	102	14	10
Deaths (from influenza)	267	20	15	6	10	512	41	48	21	25
Pneumonia, primary			458	23				395	29	
Deaths		—		14	19		95	29	26	29
Polio-encephalitis, acute	2	1				1	—			
Deaths		—					—			
Poliomyelitis, acute	11	—	1	—	—	9	—	—	—	—
Deaths		—	—				1	—		
Puerperal fever	1	1	13	1	—	8	8	15	4	—
Deaths							—			
Puerperal pyrexia	146	9	12		—	195	12	25		2
Deaths										
Relapsing fever	1	—			—	—	—			—
Deaths										
Scarlet fever	1,300	62	170	30	20	975	35	130	51	59
Deaths	—	—	—	—	—	—	—	—	—	1
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	2	—	—	—	—	—	—
Deaths			—		—			—	—	—
Whooping-cough	3,248	67	690		17	571	18	21		21
Deaths	42	2	19	1	1	2	—	1	2	2
Deaths (0-1 year)	478	36	137	39	26	549	56	108	38	36
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	7,150	921	888	279	244	8,028	1,208	975	343	256
Annual death rate (per 1,000 persons living)			19.3	18.5	21.4			18.0	22.9	22.5
Live births	5,157	392	859	361	210	6,296	997	891	319	234
Annual rate per 1,000 persons living			17.4	24.0	18.4			18.0	21.3	20.6
Stillbirths	208	12	51			262	26	43		
Rate per 1,000 total births (including stillborn)			56.0					46		

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Of the commoner acute infectious diseases, scarlet fever and measles have slightly increased in incidence during the week. These two diseases, and also whooping-cough, have been tending to increase in the last few weeks but with considerable fluctuations from week to week. Although they are more prevalent than at the corresponding period of last year, the slow irregular rate of weekly increase suggests that large-scale epidemics are unlikely.

Cerebrospinal Fever

For the first time this year the number of notifications has dropped, and experience shows that it is likely to decline further in the coming weeks, although not necessarily in regular fashion. Despite the decrease in the notifications, the number of administrative areas involved has risen during the week from fifty to fifty-one; the following are most heavily affected: Lancaster 54; Yorks, West Riding, 31; Glamorgan 27; Warwick 23; London 22; Chester 18; Essex 14; Middlesex 14; Stafford 14; Northumberland 12; Devon 11; Surrey 10; Durham, Gloucester, Hertford, and Kent 9 each; Somerset 8; Norfolk 7; Berks and Southampton 6 each. The details of the notifications in counties recording more than 12 in the week indicate that the disease is widely scattered in each administrative area, probably affecting the rural and urban districts per head of population as much as the county boroughs. For the week ending March 15 notifications amounted to 330.

In Scotland notifications rose from 70 to 97 and administrative areas involved rose from 23 to 26; the disease is prevalent in the counties of Ayr 7, Fife 5, Lanark 4, Moray and Nairn 4, Clackmannan 3, and the boroughs of Glasgow 32, Edinburgh 13, Kirkcaldy 4, Falkirk 3.

Dysentery

Although dysentery has fallen since last week it is more prevalent than usual, chiefly due to localized outbreaks of considerable magnitude in institutions. Over five-sixths of the total occurred in five administrative areas, the remaining fifteen areas involved recording single or small numbers of cases only. The areas chiefly affected are Essex 52 (Colchester M.B. 48, Brentwood U.D. 4); Yorks, West Riding 31 (Sheffield 1, Wakefield 4, Aireborough U.D. 5, Goole M.B. 18, Pudsey M.B. and Shipley U.D. 1 each); Bedford 29, all in Biggleswade R.D.; Lancaster 23 (Manchester 14, Lancaster M.B. and Warrington 1 each, Blackburn R.D. 2, Whiston R.D. 5); London 17 (Wandsworth 10, and 1 each in Chelsea, Holborn, Islington, Lewisham, Paddington, St. Marylebone, and Stepney). Details are available of the Goole outbreak, in which 1 death has been recorded so far. Of 17 cases among the infirm inmates in one block of the county institution one of the patients came from Wakefield, where two cases had previously been reported, but the source of the outbreak has been ascribed to two carriers of the disease, evacuees from Hull and London respectively. For the week ending March 15, 146 cases of dysentery were notified.

In Scotland cases were recorded in the counties of Aberdeen 5, Fife 3, Lanark 1, Renfrew 1, and the boroughs of Aberdeen 2, Dundee 7, Edinburgh 5, Glasgow 1. At the time of going to press there are reports of a widespread outbreak of paratyphoid B fever in the counties of Moray and Nairn, Inverness, and Ross, but no details are available as to source or numbers affected.

Influenza for Week Ending March 15

In the week ending March 15, 132 deaths were ascribed to influenza in the great towns, 67 fewer than in the previous week. Of these deaths, 6.8% were at ages under 25 and 54.54% at ages over 65. In the County of London 15 deaths were registered (13 in the previous week). The proportion of total deaths coming from the South-Eastern Area was 28.36%. It would appear that the winter epidemic is now over.

Medical News

The names of Dr. Mary Barrow of Birmingham and Dr. Andrew Campbell Clarke, Divisional Police Surgeon, Salford Police Force, have been brought to notice for brave conduct in civil defence.

Lord Horder will read a paper on "The Modern Troglodyte" before the Royal Society of Arts (John Adam Street, Adelphi, W.C.) on Wednesday, April 2, at 2.30 p.m., when Mr. Ernest Brown, Minister of Health, will preside.

At the next meeting of the Medical Society of London, to be held at 11, Chandos Street, Cavendish Square, W., on Monday, March 31, at 4.30 p.m., a discussion on "The Factors influencing the Healing of Wounds" will be introduced by Dr. John M. Converse from the U.S.A. and Mr. Alan H. Hunt.

The next meeting of the Shaftesbury Military Hospital Medical Society will be held at the hospital on Tuesday, April 1, at 3 p.m., when Lord Horder will deliver an address on "The Future of Medicine." An extraordinary meeting will take place on Saturday, March 29, at 3 p.m., at which a discussion on "The Dyspeptic in the Army" will be opened by Dr. Charles Newman and Mr. Reginald T. Payne.

At the next meeting of the Society of Public Analysts and Other Analytical Chemists, to be held at 4 p.m. on Wednesday, April 2, at the Chemical Society's Rooms, Burlington House, W.1, three papers will be presented and discussed, including two on the determination of arsenic in foodstuffs contaminated with arsenical war gases. Guests introduced by members are welcomed at the meetings by the council, but they are reminded that the proceedings are strictly private.

The United States National Foundation for Infantile Paralysis will hold a semi-annual meeting of its medical committees on May 15, when applications for grants for the study of the cause, prevention, and treatment of the disease will be considered.

According to *Nature* of March 8 the Swammerdam Medal for 1940 has been awarded to Prof. G. W. Grijne of Amsterdam, the Nestor of Dutch physiologists. The six previous recipients have been K. T. E. von Siebold (1880), Ernst Haeckel (1890), K. Gegenbaur and Hugo de Vries (1910), Max Weber (1920), and H. Spemani (1930).

The issue of *Science* for February 7 is devoted to reports of the recent Philadelphia meeting of the American Association for the Advancement of Science and associated societies. The programme of the medical section was entirely given up to human malaria.

At the half-yearly meeting of the executive committee of the Duke of Gloucester's Red Cross and St. John Fund it was announced that over £5,000,000 have been raised by voluntary contributions since the outbreak of war.

The American Academy of Arts and Sciences has awarded nearly 16,000 dollars to be divided equally among four scientists for their contributions to the treatment and care of genito-urinary diseases. The money comes from the Amory Foundation established in 1912. Three of the prizes go to Americans: Dr. Joseph F. McCarthy of New York, Dr. Carl Richard Moore of Chicago, and Dr. Hugh H. Young of Johns Hopkins. The fourth will go to a European scientist whose name will not be revealed at present.

Dr. John F. Fulton, Sterling professor of physiology at Yale University, has presented to the Yale Medical Library a collection of books and Government documents bearing on military medicine published in England since the beginning of the war.

Dr. Evarts A. Graham, Bisby professor of surgery, Washington University School of Medicine, St. Louis, Mo., has had conferred on him the honorary degree of doctor of science by the University of Pennsylvania.

Australia, which has the lowest infantile mortality in the world, has fitted out a children's sanitary train to provide help for mothers and children in out-of-the-way country districts.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

Sjorgen's Syndrome

Dr. MARGARET COLLS (Isle of Man) writes: I should be grateful for information on the above syndrome. Where can I find an account of it in the medical literature? I have a female patient aged 47 who for the past six years has suffered from complete absence of saliva, from dysphagia, extreme dryness of the skin, and alopecia necessitating the wearing of a wig. Her mouth is in a very unhealthy condition from gingivitis and bleeding of the gums. She has great difficulty in masticating her food. Mouth washes, ascorbic acid tablets, and an acid mixture before meals have been prescribed, but without much alleviation of her distressing condition. Can someone suggest further treatment?

Rose-hip Jelly and Wild Herbs

Miss GWENDOLINE BOWES (Grange-in-Borrowdale, Keswick) writes: I think that Dr. W. J. Burns Selkirk (March 15, p. 426) would find the following recipe for rose-hip jelly pleasing: Take the outside only of the rose-hips and press into an enamel pan, and just cover with water. Simmer until very soft and rub through a sieve. To each pound of pulp add 3/4 lb. of sugar and 2 oz. of preserved ginger. Boil until the jelly sets when tested. The above is taken from *The English Cookery Book*, by Lucie G. Nicholl, published by Faber and Faber. There is an excellent section "The Rambler's Harvest" giving many interesting country recipes. The old suggestion of cooking the fronds of young bracken—almost asparagus—may be raised again this year. Five of us made the experiment last, gathering with loving care, and cooking the greens until tender, serving with butter sauce. Never again: we were reminded of a very bitter dose of quinine. May I add that mustard and cress grown on blotting paper, kept moist, is very delicious, and, given seasonable sun, yields a quick result.

Dr. E. SAKOSCHANSKY (Southampton) writes: Dr. Burns Selkirk inquires what book dealing with the use of wild herbs would be recommended. *Wild Foods of Britain*, by Jason Hill (Adam and Charles Black, London) is a veritable mine of information. Hill gives a recipe for making hawthorn jelly from hawthorn fruit (haws); he states that a jam is made in Scotland from wild rose hips, but gives no recipe, though he states that the hips of the wild rose are a commercial source of the anti-scorbutic vitamins, and he gives an interesting account of the use of the dandelion.

Herbs for Flavouring Food

Dr. ROBERT BUXTON (Weston-super-Mare) writes: Two letters appeared in your issue of March 15 referring to the use of herbs for flavouring food which I read with interest, as I have a herb-garden. Vegetables will this year be more important than ever as part of the national diet. However, as a nation we are unenterprising in the way we cook them, in the few varieties we use, and in the neglect of herbs in all kinds of dishes. Herbs are easy to grow and provide a variety of flavours on the table and colours in the garden. Many herbs can be used in the kitchen, but only a few are necessary, the others being for the connoisseur. To anyone interested I would recommend buying in April the following herbs: balm, chives, tarragon, chervil, winter savory, borage. These are obtainable from Miss Eleanor Sinclair Rohde, Cranham Lodge, Reigate, Surrey, together with books on the subject written by her. Herbals are full of folk-lore and charm—for example: "If poisoned by your step-mother, drink horehound hot from the fire."

Income Tax

Medical Boards—Fees—Schedule E

"A. M." holds an appointment on a Medical Board, and being on the B.M.A. Ophthalmic List deals with cases referred by other Medical Boards. Are the fees from the latter work assessable under Schedule E?

*** Schedule E applies to "all salaries, fees, wages, perquisites or profits whatsoever . . ." paid to a person exercising an office or employment of profit. The language used seems wide enough to cover the fees received for the referred cases.

Fall in Earned Income

"A. B.'s" earnings for the year to December 31, 1940, show a fall of 18%—i.e., less than the statutory requirement of 20%—but a comparison between the amount of the assessment and the earnings for the year to March 31, 1941, will probably show a fall in excess of 20%.

*** "A. B." can claim to base the comparison on the year to March 31, 1941. The most convenient method is probably to take three-quarters of the 1940 profit plus the amount of the profits for the three months to March 31, 1941, as representing the earnings of the year to that date.

LETTERS, NOTES, ETC.

In Gratitude to Medical Colleagues

Dr. LEWIS G. GLOVER, Honorary Treasurer of the Royal Medical Benevolent Fund, writes: I desire to acknowledge gratefully through your columns a donation of £50 which I have received from a doctor as a mark of appreciation of the great kindness and consideration he has received from his medical colleagues during his wife's recent illness, which necessitated an extensive abdominal operation. He adds: "It is a very small return for all the kindness and skill that has been expended on my wife. I wish my means allowed for a bigger cheque, but I hope that I may be helping, through the Royal Medical Benevolent Fund, some unfortunate fellow medico or his dependants."

How to Make a Civilian Respirator More Serviceable

Dr. THOMAS MARLIN (London, W.1) writes: People who have to move about vigorously while wearing the civilian gas mask experience a certain amount of inconvenience, because the mask, owing to its non-rigid construction, flaps about from side to side, and is apt to pull away from the face. This can be prevented by the following simple method devised by Mr. A. L. Bunker, an ambulance instructor in a Home Guard battalion. Take a strip of cloth 54 inches long and 2 or 3 inches wide and place it over the crown of the head so that one end is shorter than the other. The short end should reach to the breast pocket. Now, holding an end in each hand, bring the longer end under the point of the jaw and up the other side of the face. Cross it with the other end above the temple (see illustration). Carry the longer end round the back of the head and the shorter end across the forehead. Tie the two ends together where they meet.

Plaster Casts for Fractures

Messrs. T. J. Smith and Nephew, Ltd., of Neptune Street, Hull, have prepared for issue to the medical profession only a pamphlet entitled "The Preparation of Plaster Casts, with Special Reference to the Use of Wide 'Cellona' Material." This is available on application to the medical department of the firm at the address given above.

Calcium Lactate: Correction

Dr. J. A. BROWN (Birmingham) writes: I apologize for the error in the prescription published under the above heading (March 22, p. 468). The quantities are obviously transposed and the prescription should read:

℞ Calcii carb. 3j
Ac. lactic. 3iij
Aq. .. .. ad 3viij
F.M. Sig.: 3ss t.d.s.